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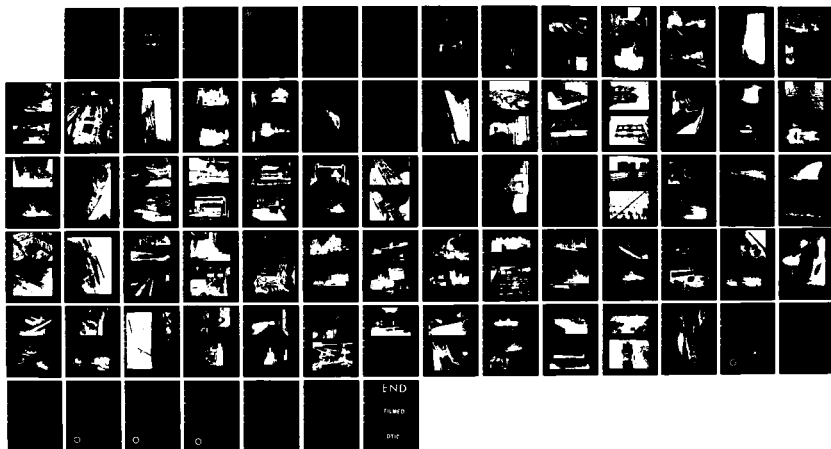
JOINT LOGISTICS OVER-THE-SHORE II TEST AND EVALUATION  
PHOTOGRAPHIC SUMMARY (U) JOINT LOGISTICS OVER THE SHORE  
LITTLE CREEK VA 01 JUL 85

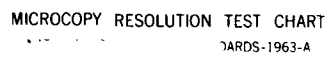
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# DEPARTMENT OF DEFENSE

Joint Test Director

Joint Logistics Over-the-Shore II

Test and Evaluation



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## PHOTOGRAPHIC SUMMARY REPORT

- Deployment Test
- RO/RO Test
- Throughput Test
- Demonstrations

1 JULY 1985

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# DEPARTMENT OF DEFENSE

JOINT TEST DIRECTOR  
JOINT LOGISTICS OVER THE SHORE (JLOTS II)  
NAVAL AMPHIBIOUS BASE  
LITTLE CREEK, NORFOLK, VA 23521

1 July 1985

Subj: Photographic Summary Report, 1 July 1985

Ref: (a) Operational Test Report, JLOTS II Throughput Test, 1 March 1985

1. The largest peacetime logistics over the shore exercise ever conducted by the United States military forces -- JLOTS II -- was conducted in three phases at Fort Story, Virginia between the summer of 1983 and the fall of 1984. Over 3,000 personnel from all four services and the U.S. Coast Guard participated in this joint test and evaluation program sponsored by the Department of Defense.

2. This report provides photographic documentation of all three JLOTS II test phases -- The RO/RO Test, the Deployment Test, and the Throughput Test. A short summary of the test objectives and execution is provided for each phase.

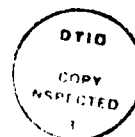
3. The JLOTS II Test Program received outstanding support from all the military services. The test results will be most helpful in shaping future doctrine and developing appropriate force structure to meet over the shore military requirements. I extend my personal appreciation for the enthusiastic, "Can-Do" spirit exhibited by all participants.

N. P. FERRARO

Rear Admiral, SC, U.S. Navy  
Joint Test Director

Distribution List:

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# Photographic Summary Report

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Distribution: See Operational Test Report, JLOTS II Throughput Test, dated 1 March 1985.

## ROLL-ON/ROLL-OFF TEST

The Joint Logistics Over-The-Shore II (JLOTS II) Roll-On-/Roll-Off (RO/RO) Test was conducted in two phases in the summer/fall of 1983 using two ships that are representative of RO/RO ships in the U.S. Flag Fleet. The first phase was conducted in July 1983 with the MV CYGNUS, a self-sustaining RO/RO ship (with integral ramp). The second phase, in September 1983, used the SS ATLANTIC BEAR, a non self-sustaining RO/RO ship (without an integral ramp).

The purpose of the test was to assess the Service's capability to assemble, install, and operate the Navy's RO/RO Discharge Facility and determine sustained throughput rates for wheeled and tracked vehicles. The Discharge Facility and supporting lighterage would be used when fixed facilities are damaged or otherwise not available. The test involved offloading (and backloading) approximately 150 selected Army and Marine Corps vehicles using the Discharge Facility moored to the ship. The USS Atlantic Bear test differed from the MV CYGNUS test in the additional installation of a ramp and fendering as part of the RO/RO Discharge Facility. Lighterage, consisting of causeway ferries and LCU's, transferred vehicles from ship to shore. The ships were anchored approximately one mile offshore at Fort Story, Virginia during offload/backload operations.

The test confirmed that elements from the Navy's Amphibious Construction Battalion could perform all operations related to the installation, operation, and removal of the Discharge Facility. Day and night testing also indicated that vehicle operators had little or no difficulty negotiating the ramps. Discharge Facility, or beach offload sites. The Discharge Facility proved to be an effective and reliable means of offloading both self-sustaining and non self-sustaining RO/RO ships, a primary means of deploying Army and Marine Corps wheeled and tracked vehicles.

Test results indicate that installation of the Discharge Facility can be accomplished to a self-sustaining RO/RO ship in sea states 0-2 (Pierson and Moskowitz scale) with vehicle discharge operations in sea state 0-3. Installation of the Discharge Facility to a non self-sustaining RO/RO ship can be accomplished in sea states 0-2.

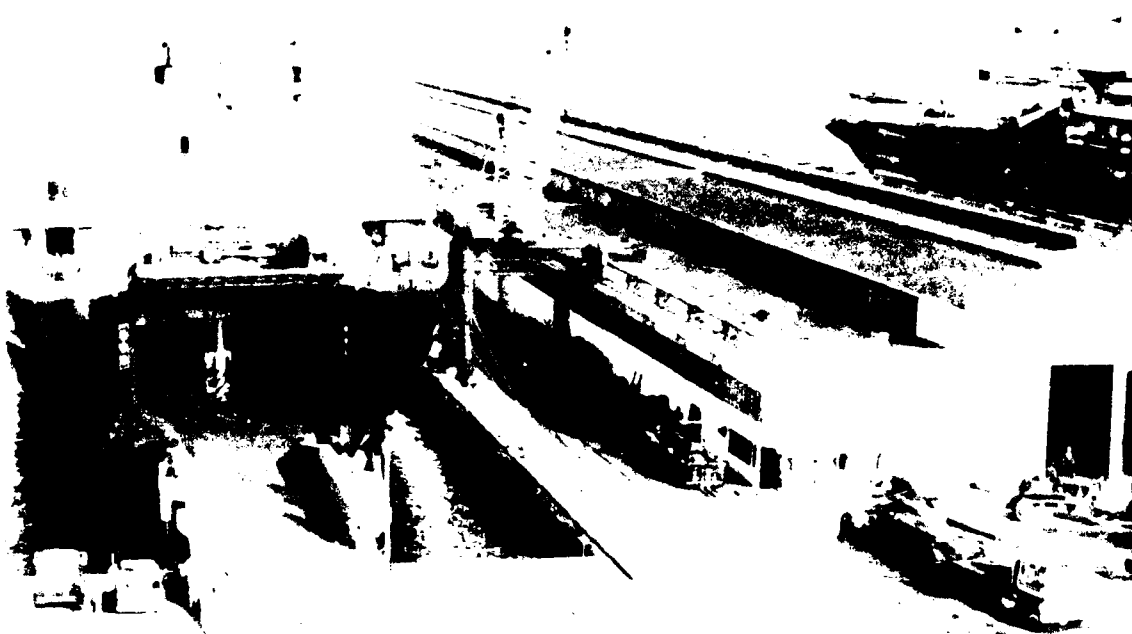
Reported throughput rates for the test (based on a 20 hour day) with a mix of causeway ferries and LCU's, indicate the capability to offload an average of 670 vehicles per day. Offload rates for LCU only operations averaged 124 vehicles per day.



Four section causeway ferry moored to RO/RO Discharge Facility astern MV CYGNUS as equipment is backloaded into the ship.



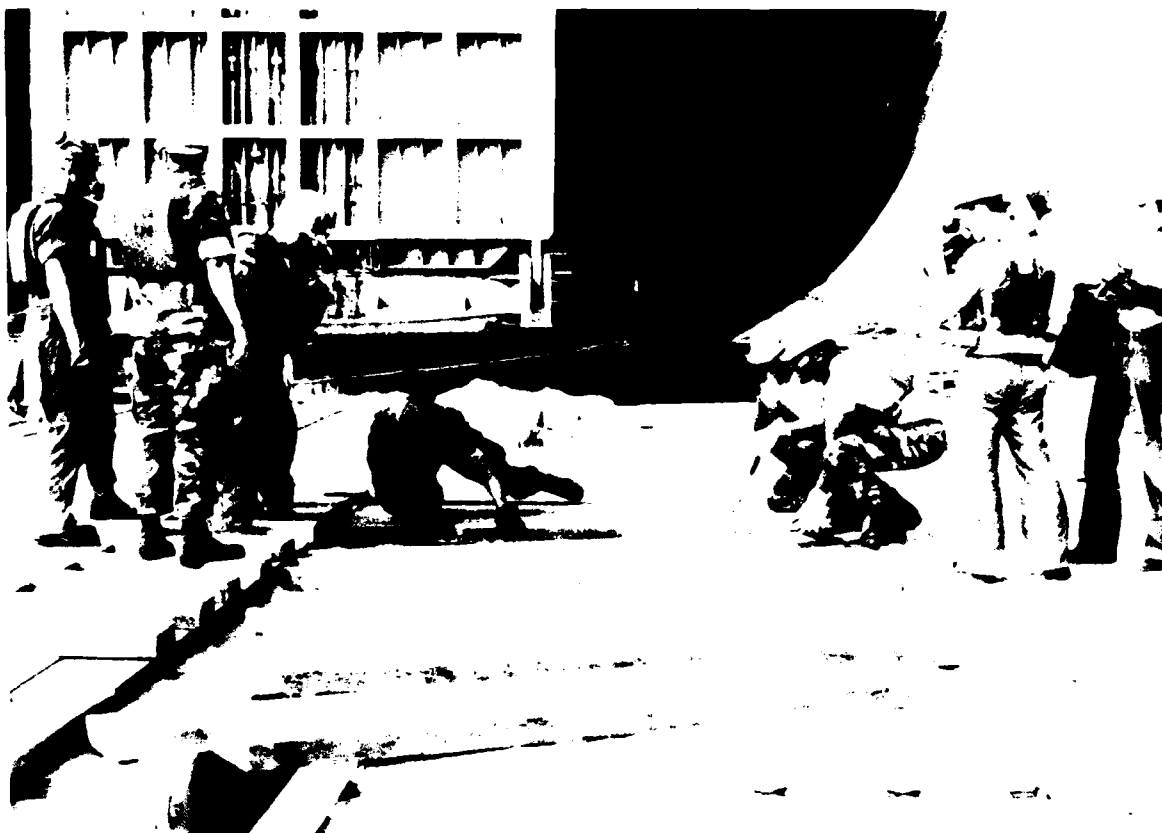
Causeway ferry approaching RO/RO Discharge Facility astern MV CYGNUS.



**TOP: MV CYGNUS docked at Pier 4, Naval Supply Center, Norfolk for loadout of vehicles and equipment for JLOTS RO/RO Test.**

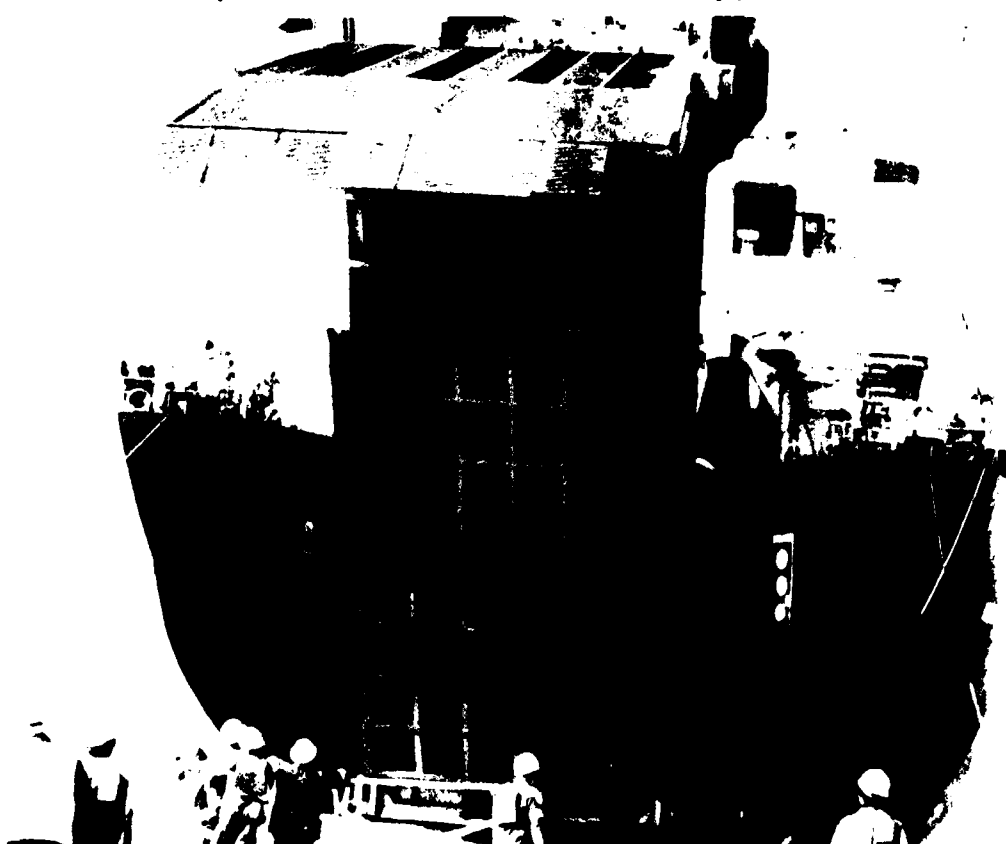
**BOTTOM: Causeway sections in a standoff moor at the stern of the MV CYGNUS to act as a stable platform for the ships ramp.**

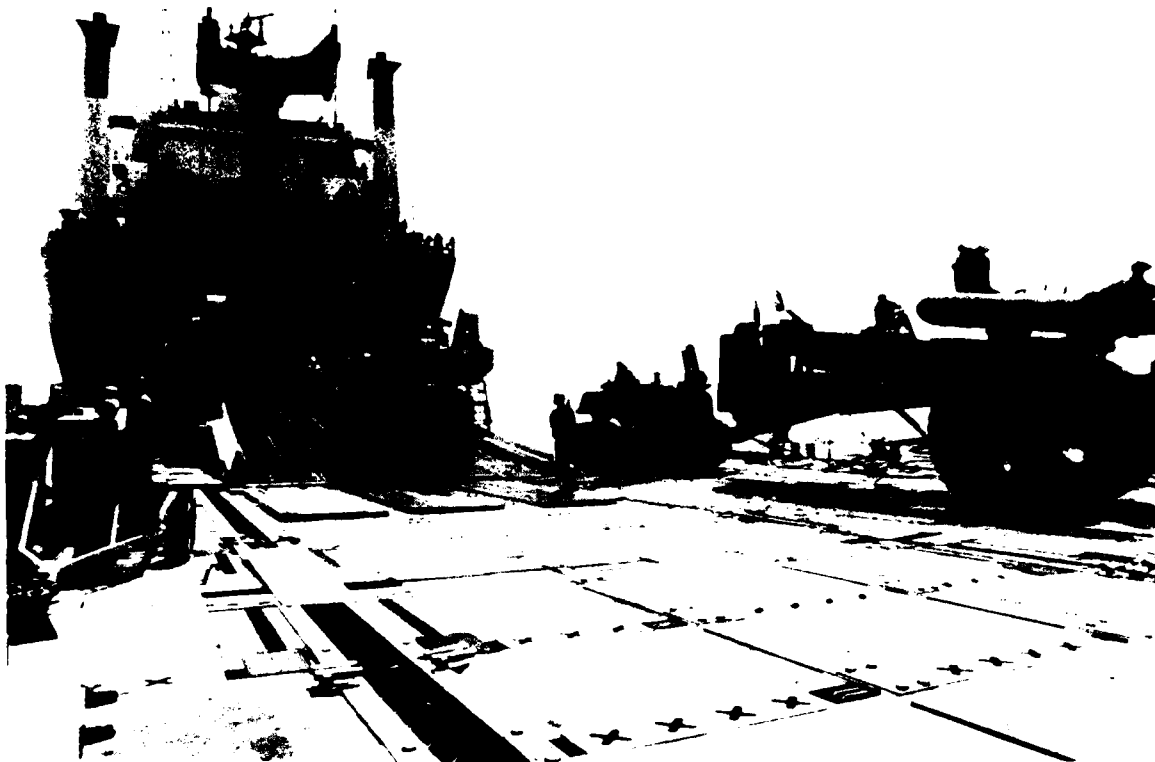




**ABOVE:** Dunnage is used on causeway platform to act as a buffer between the ships ramp and causeway section to reduce damage.

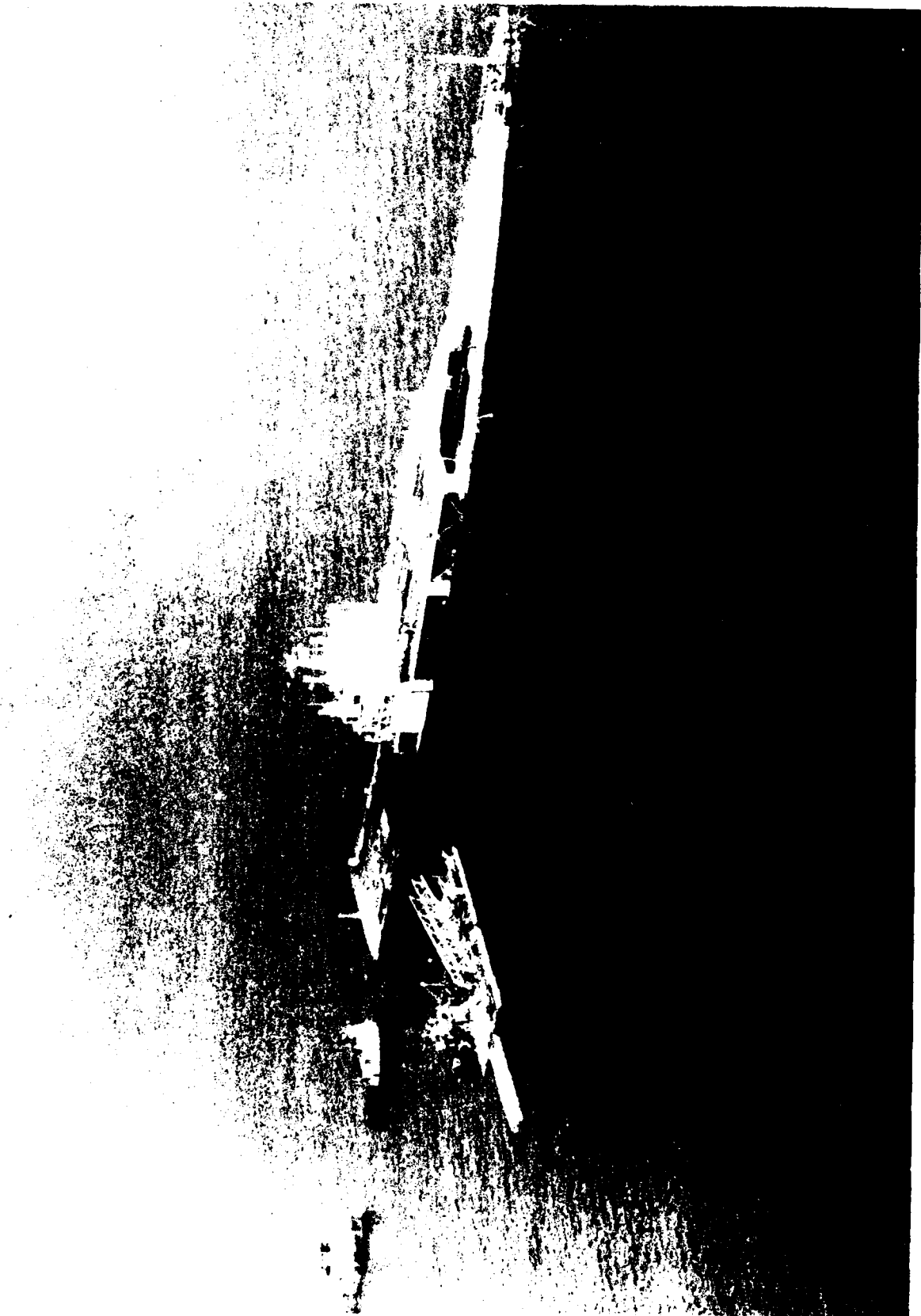
**BELOW:** The ramp of CYGNUS is lowered onto the causeway platform.



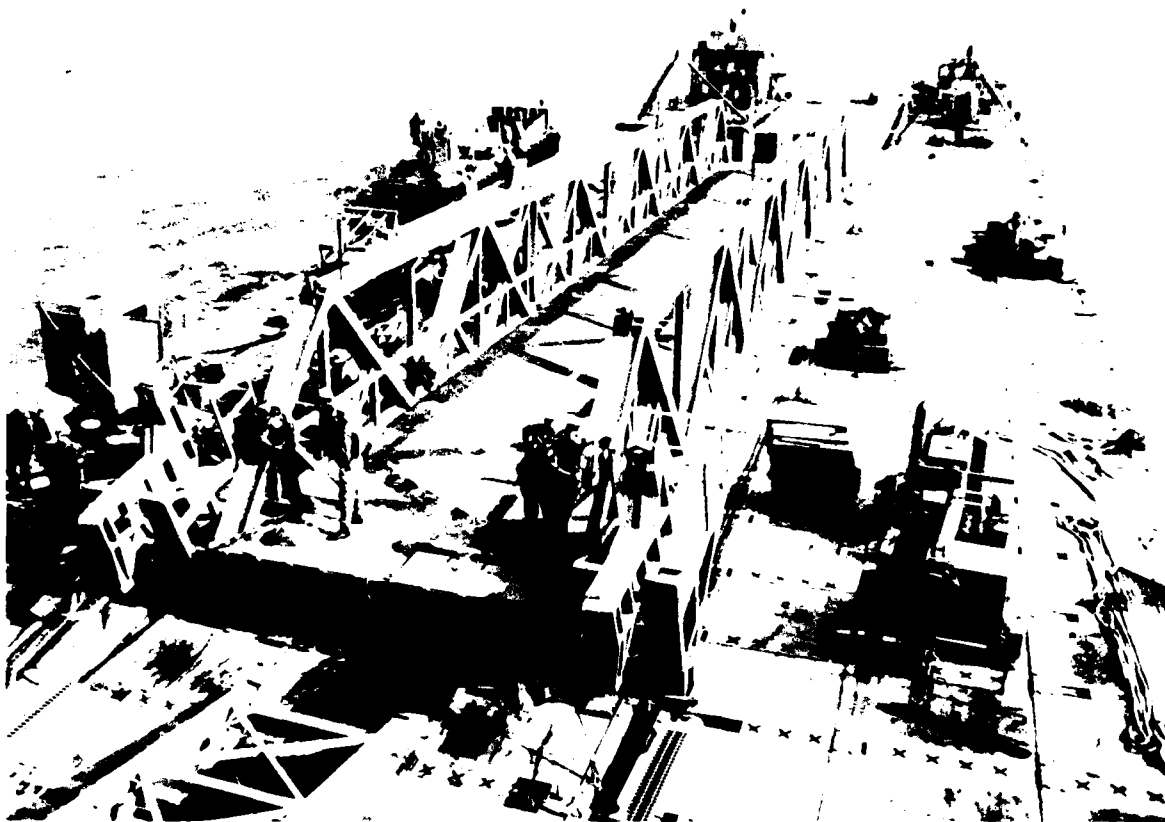


Material handling equipment (top) and vehicles (bottom) are offloaded from CYGNUS onto the causeway platform.





The ATLANTIC BEAR is anchored off Fort Story, Virginia with the causeway platform and Calm Water Ramp in place to conduct offload operations.

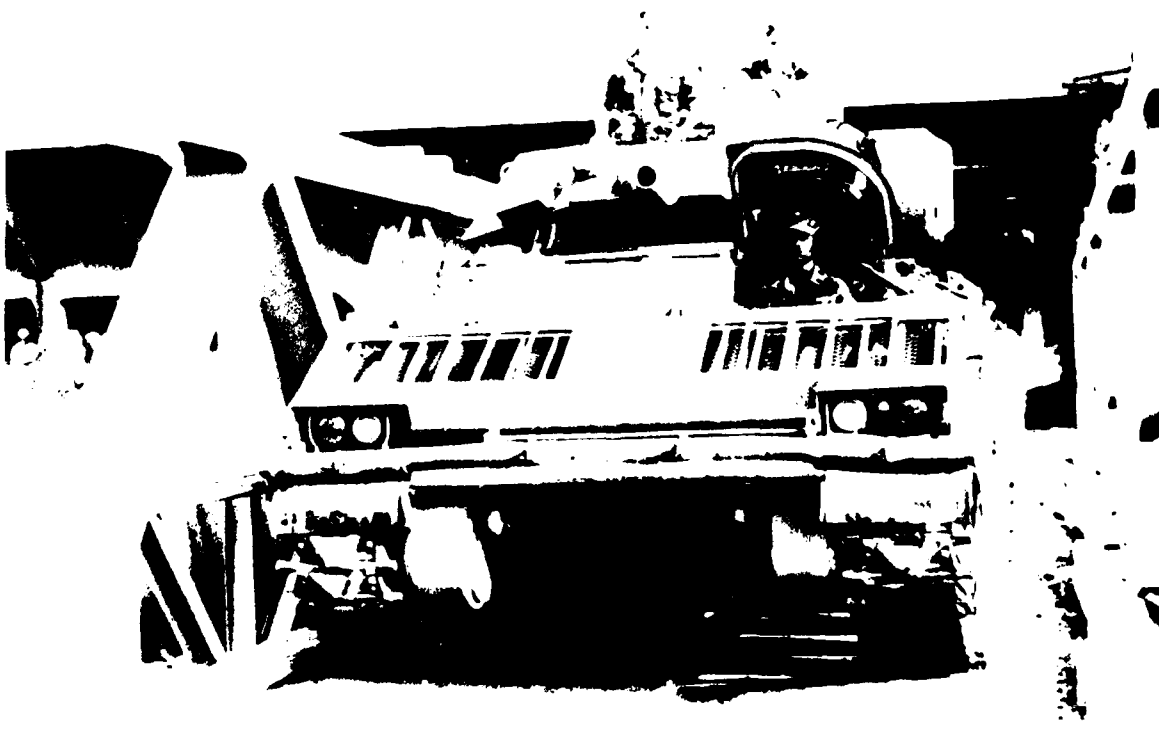


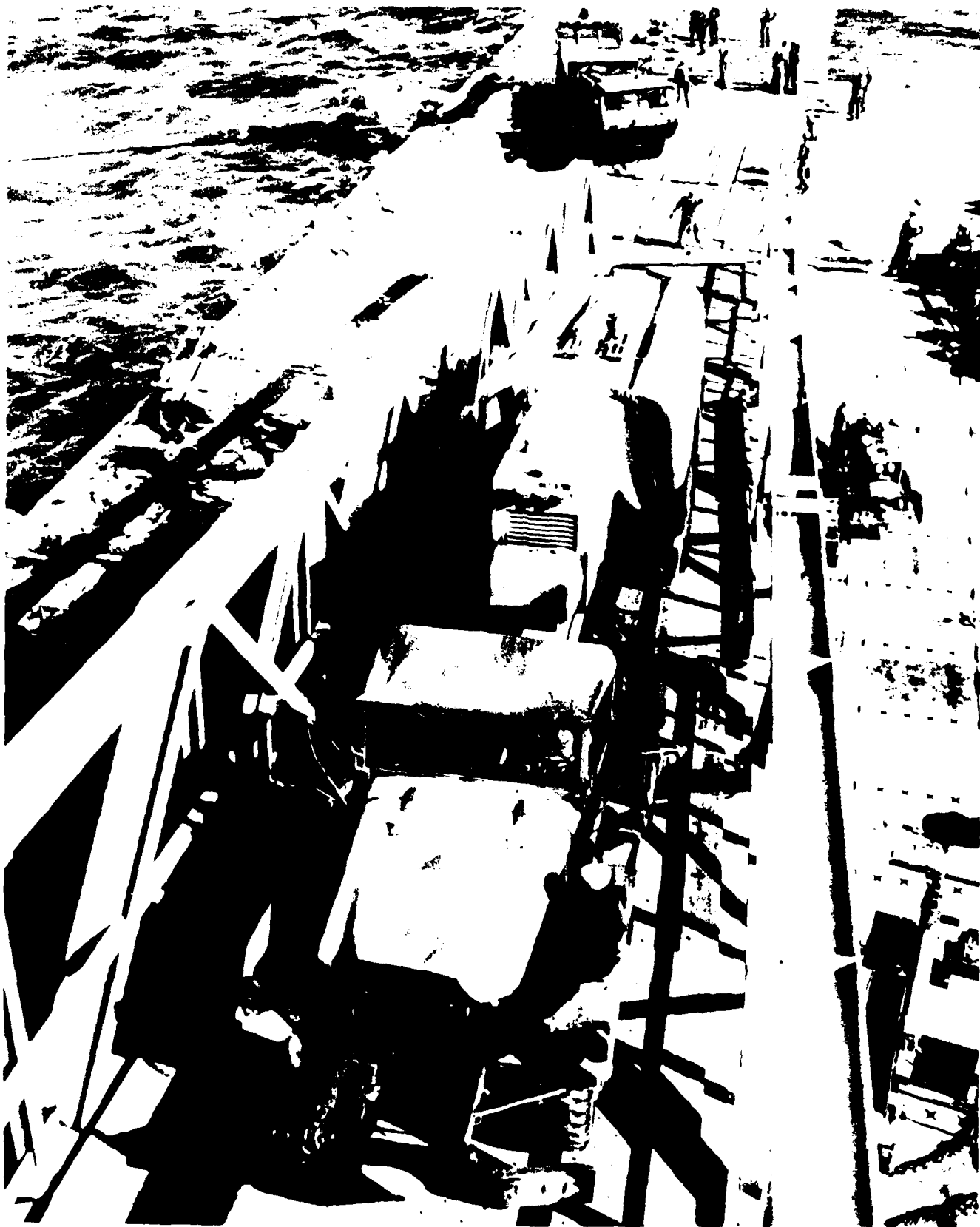
Causeway platform with portable ramp (above) and fendering system (below) prepare for mooring to ATLANTIC BEAR.

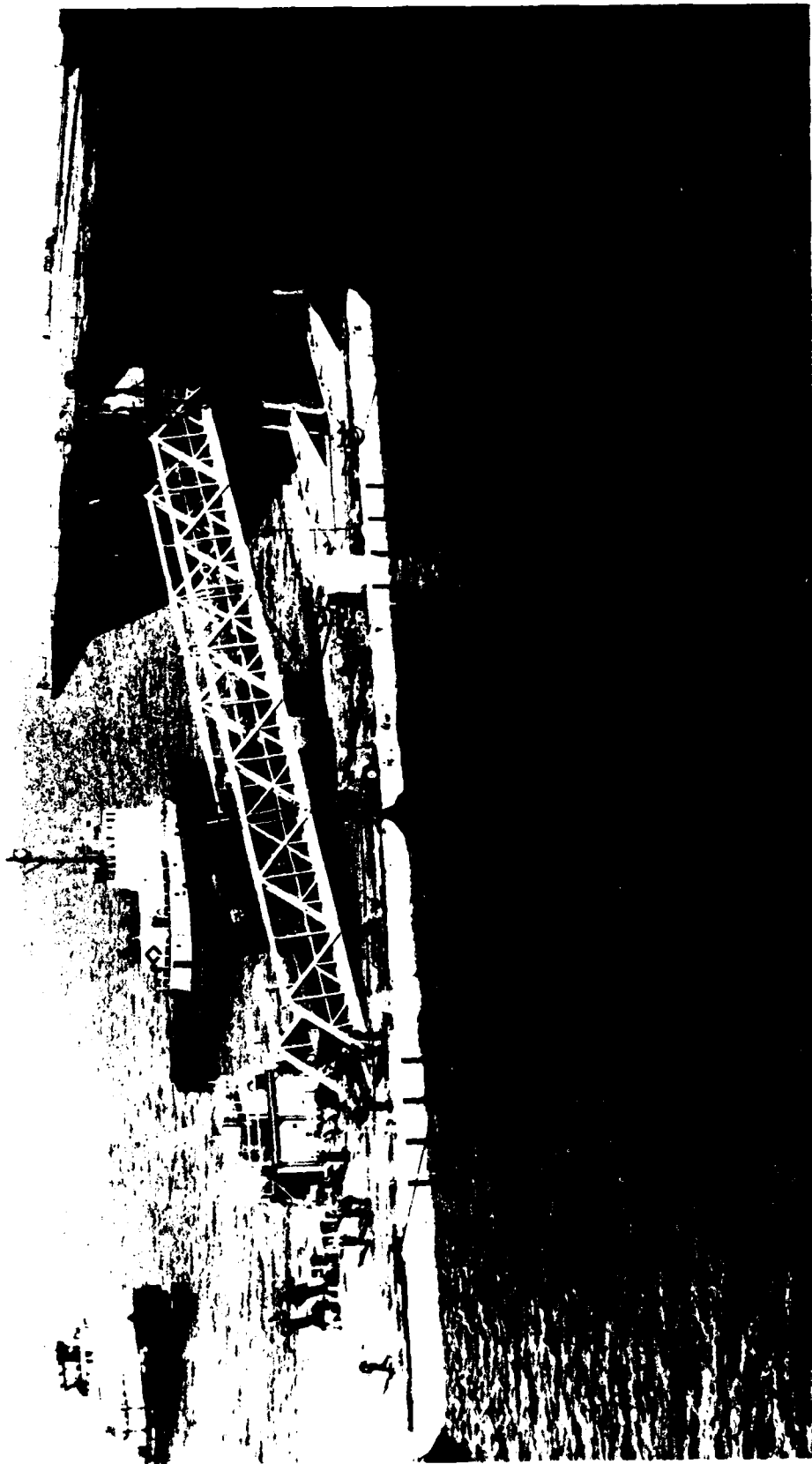




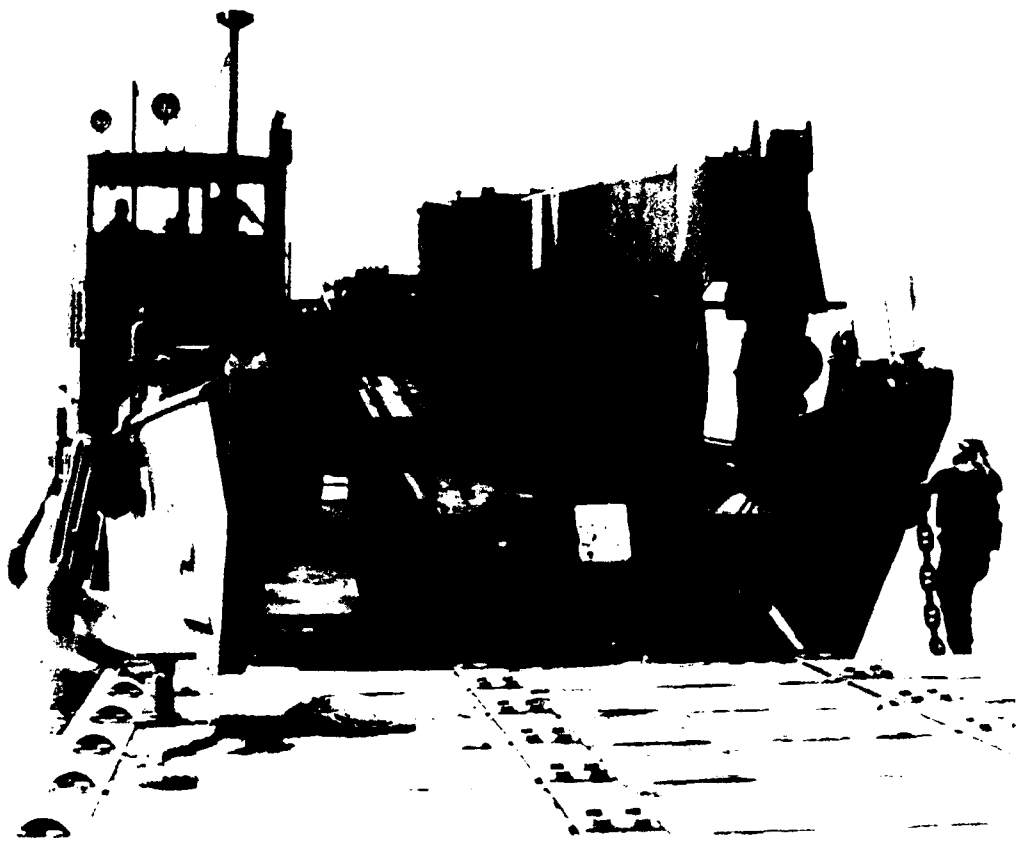
The RO/RO ramp is raised into position (above) using the ships winches and equipment. With the ramp in place (below) vehicles then depart the ship.



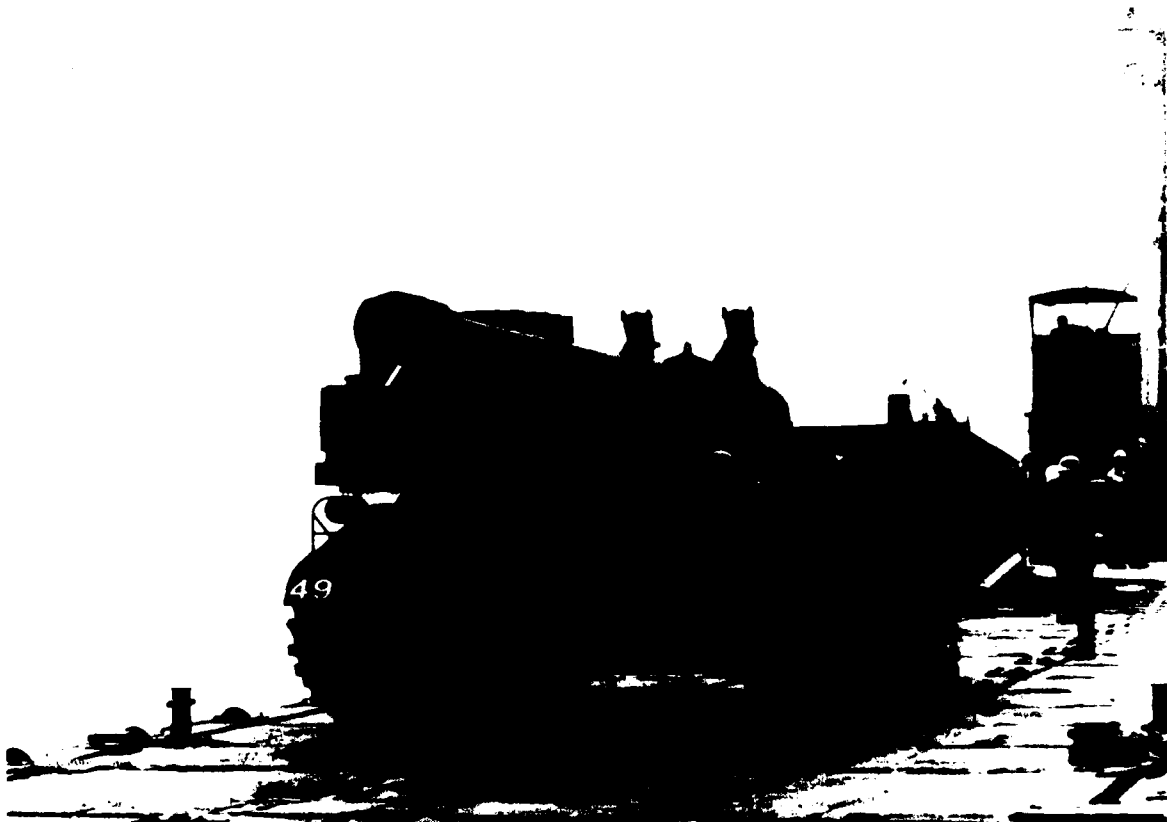


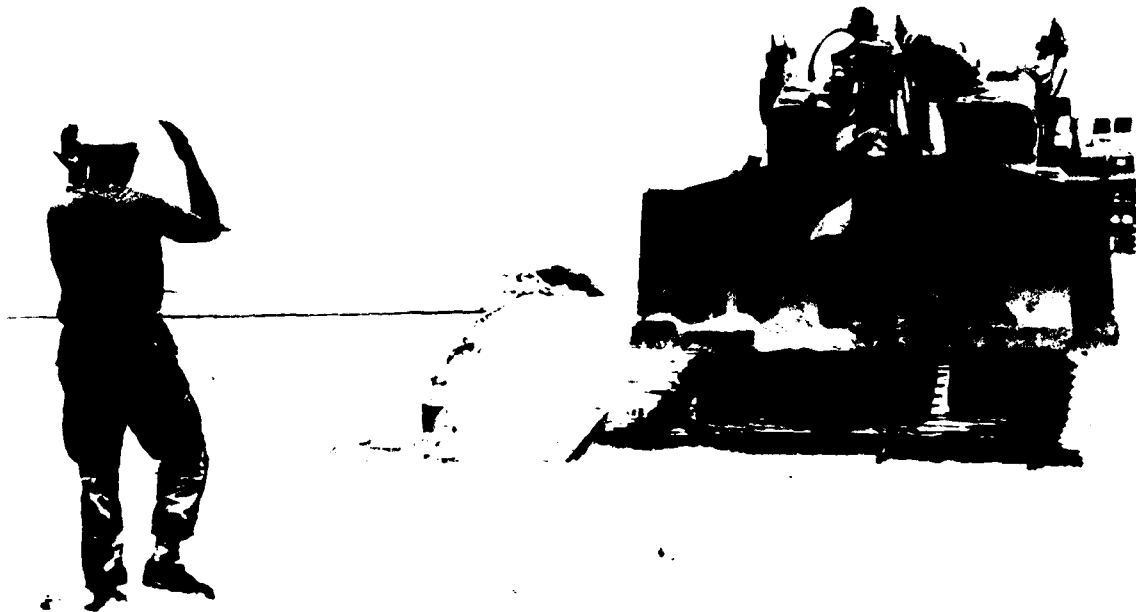


The ATLANTIC BEAR continues backload operations while anchored off Fort Story, Virginia.

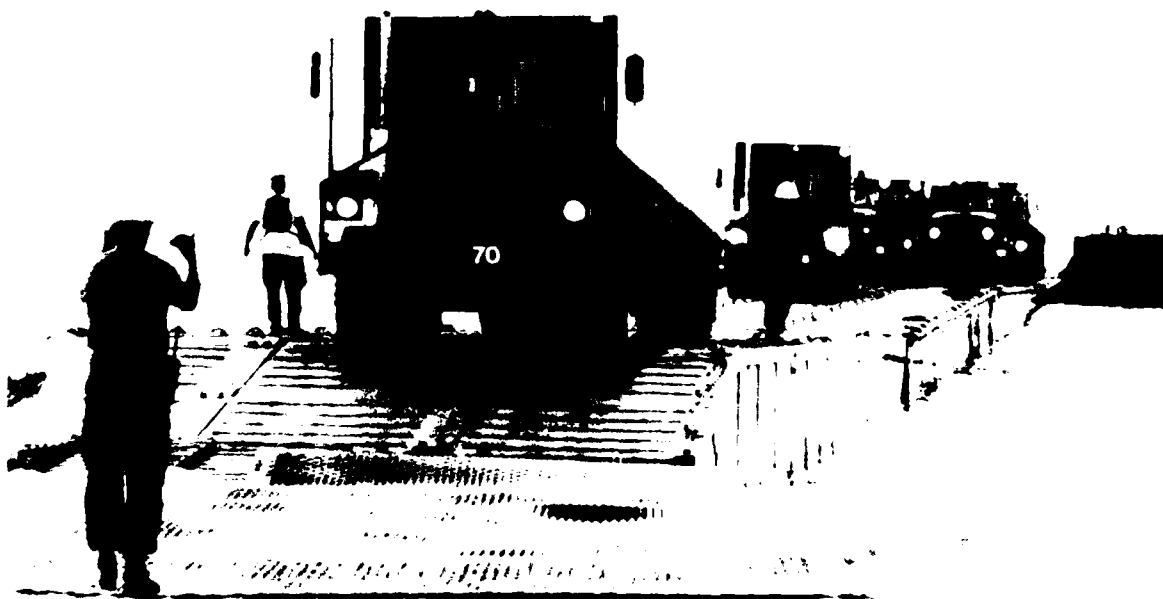


**A Landing Craft Utility (LCU) moored to the RO/RO Discharge Facility offloads wheeled vehicles (above) and tracked vehicles (below).**





Offloading heavy equipment (top) and vehicles (bottom) from the causeway ferry at the beach during offload operations.





Equipment is staged on the beach and loaded onto causeway ferries for transport back to the ship.

## DEPLOYMENT TEST

The Deployment Test demonstrated the Services' capabilities to deploy the logistics delivery equipment in merchant ships to an operating area where port facilities are inadequate or nonexistent. Successfully completing all objectives, the test included the steps necessary to load, transport, and off-load selected equipment to an objective area in order to establish an over the shore operation.

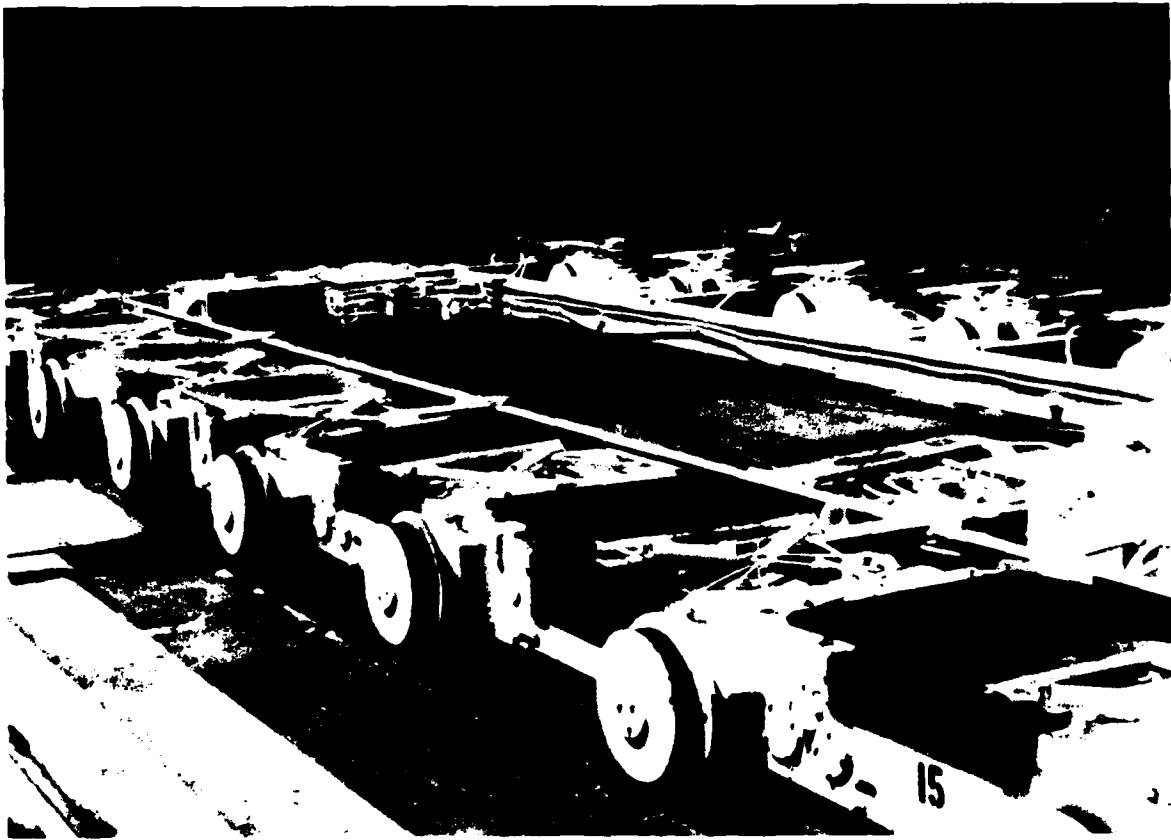
For this test, two types of ships, the SEABEE (Sea Barge) and the LASH (Lighter Aboard Ship), were chosen because they represent a unique heavy lift capability in the U.S. Flag merchant fleet. Designed to transport cargo barges, these ships are self-sustaining in that they have an onboard means to lift barges from the water and transport them to stowage locations on the ship and most importantly, offload that cargo in the objective area.

The SEABEE ship ALMERIA LYKES, utilizes an elevator mounted in the stern of the ship. The elevator is designed to lift approximately 2000 long tons from the water and locate barges to one of the ship's three decks. Pedestals mounted on the elevator and the decks of the ship act as resting pads for these barges. The ship's transporter system, one starboard and one port, is a means by which equipment is lifted off the elevator pedestals and then moved to its stowage location on the deck. Container Adapter Frames (CAF) and a newly designed SEABEE skid acted as the interface between the various loads and the ships elevator, transporter system, and pedestal stowage locations. Equipment selected for deployment on board the SEABEE ship included the Army barge mounted Temporary Container Discharge Facility (TCDF), Army 100 foot and 65 foot ocean tug boats, 1645 and 1466 Class LCU's, a Cube Barge, the LACV-30 and LARC-LX's.

The LASH ship SS LASH PACIFICO, is a single deck vessel designed to carry barges in barge cells as well as on the main deck. The barges are lifted from the water and placed on the ship by a gantry crane which travels forward and aft on rails on the main deck. Because of the outsized loads of the Navy's Amphibious Logistics System (ALS), the Navy initiated the design and the fabrication of a modified Cantilever Lift Frame (CLF) that would have the needed lift capability for the system. Its basic requirement is to lift the Navy pontoon causeway sections with equipment prestowed on their decks. Causeway sections are nominally 90 ft long x 21 ft wide x 5 ft high. The CLF is outfitted with padeyes and slings so that loads can be lifted on the ships centerline, port or starboard lifts, or dual (side by side) lifts. Equipment selected for deployment on board the LASH ship included the Causeway Section Powered (CSP), numerous empty causeway sections, causeway sections pre-loaded with components of the Navy Elevated Causeway System (ELCAS) and a LACV-30.

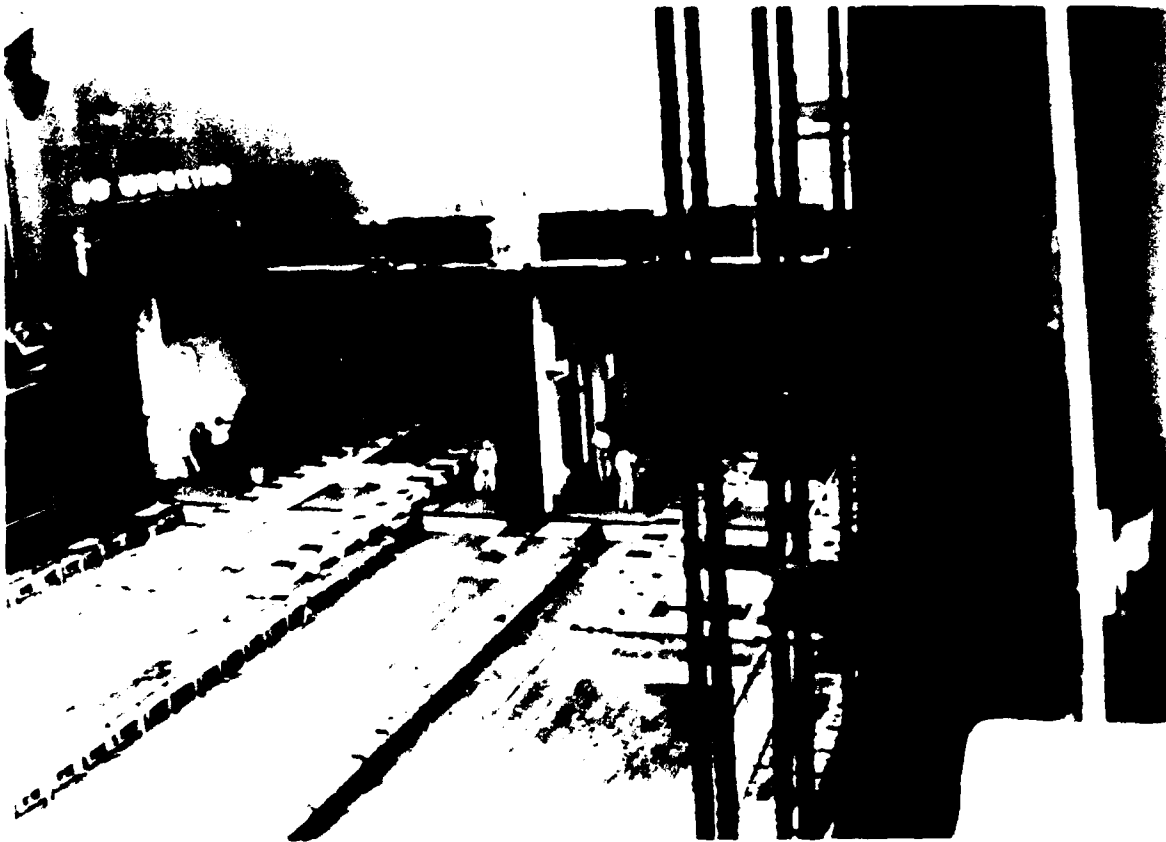


The SEABEE ship ALMERIA LYKES enroute to anchorage off Fort Story, Virginia for offload of equipment.



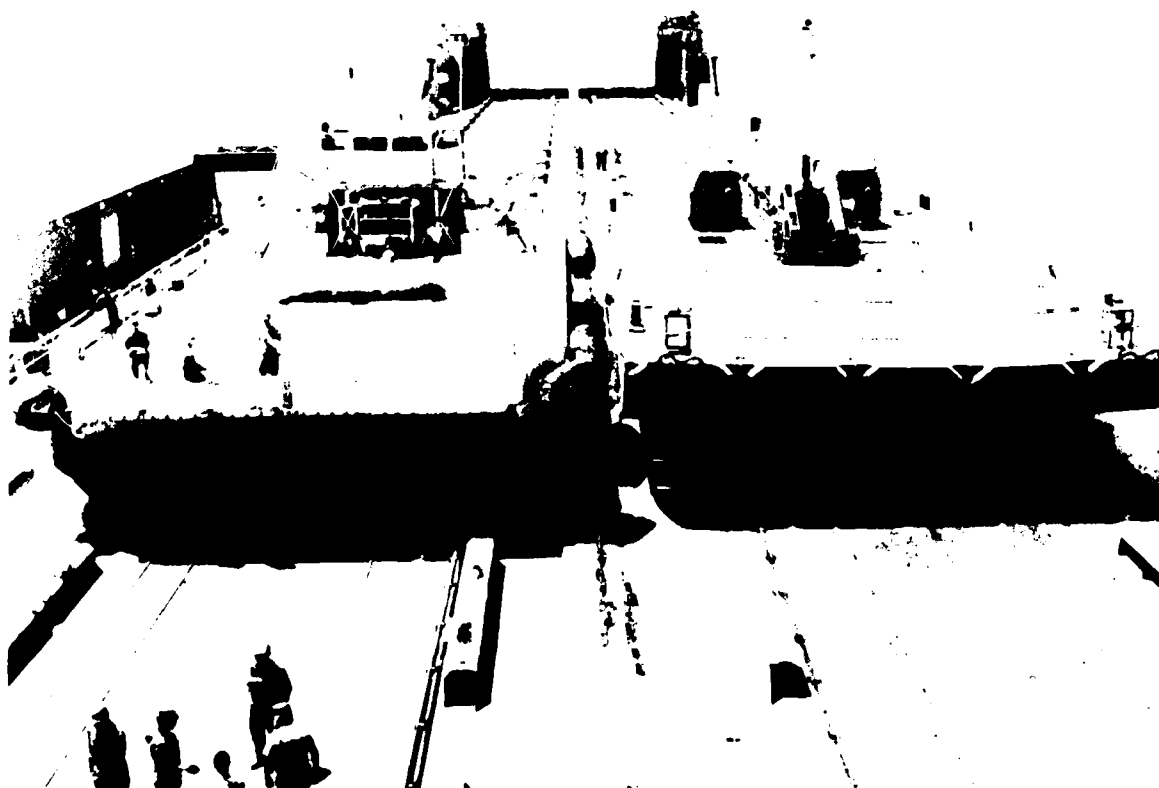
**TOP:** Pictured are the transporters and rail system used to move equipment from the ships elevator to stowage on deck.

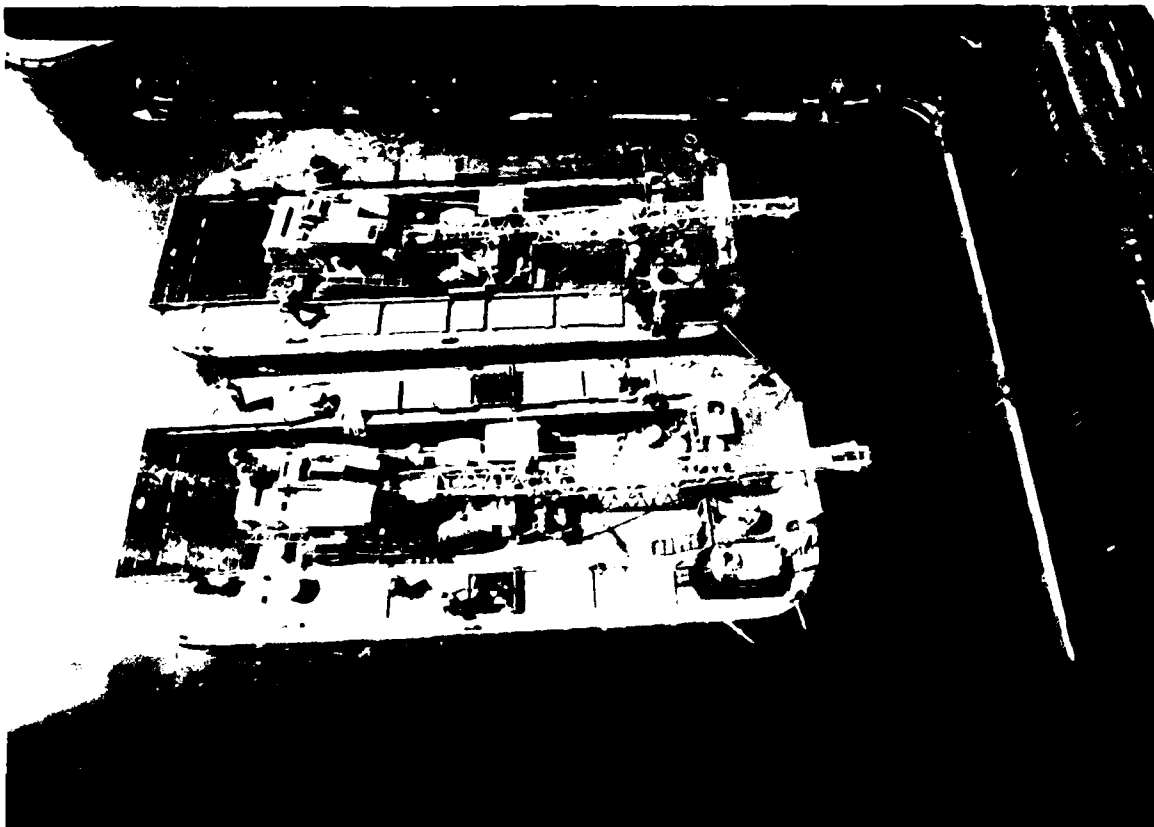
**BOTTOM:** The Transporters are moved from a lower deck onto the ships elevators in preparation for on-load operations.





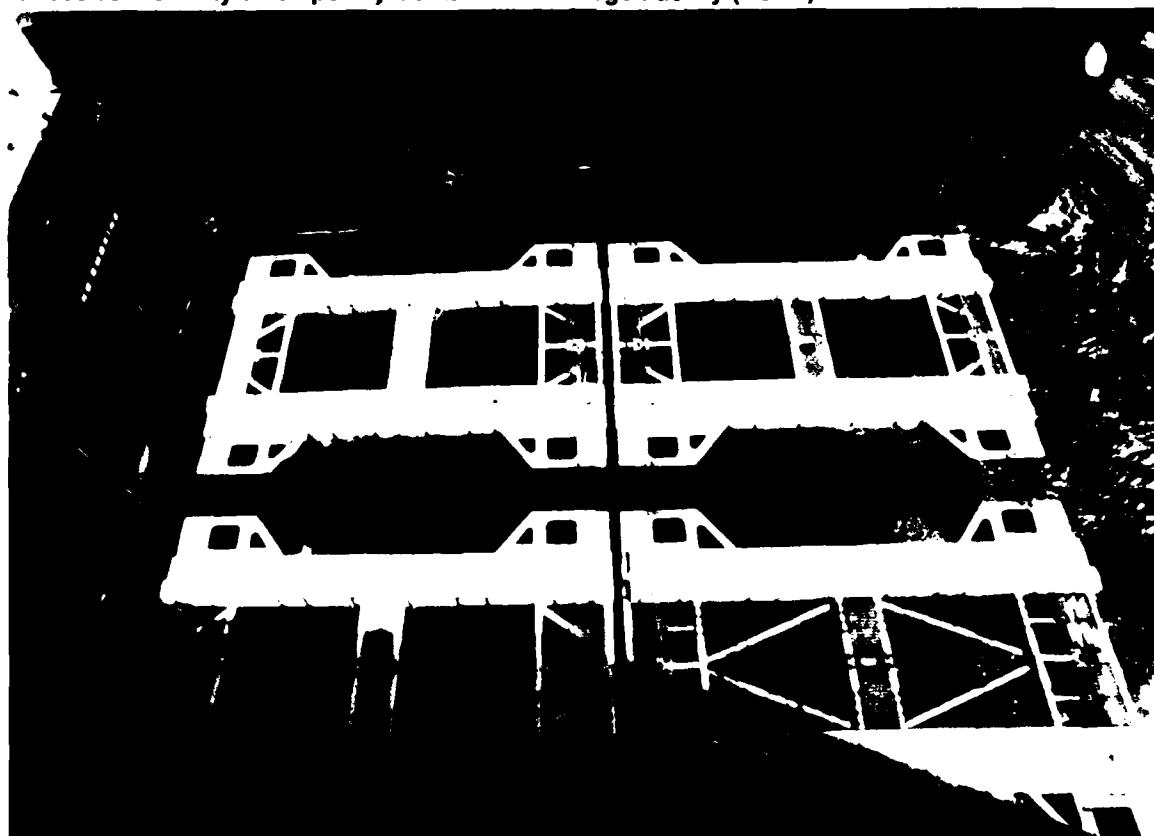
Container adapter frames are positioned on the ships elevator (above) to receive (below) the Army's LACV-30 (L) and Cube Barge (R).

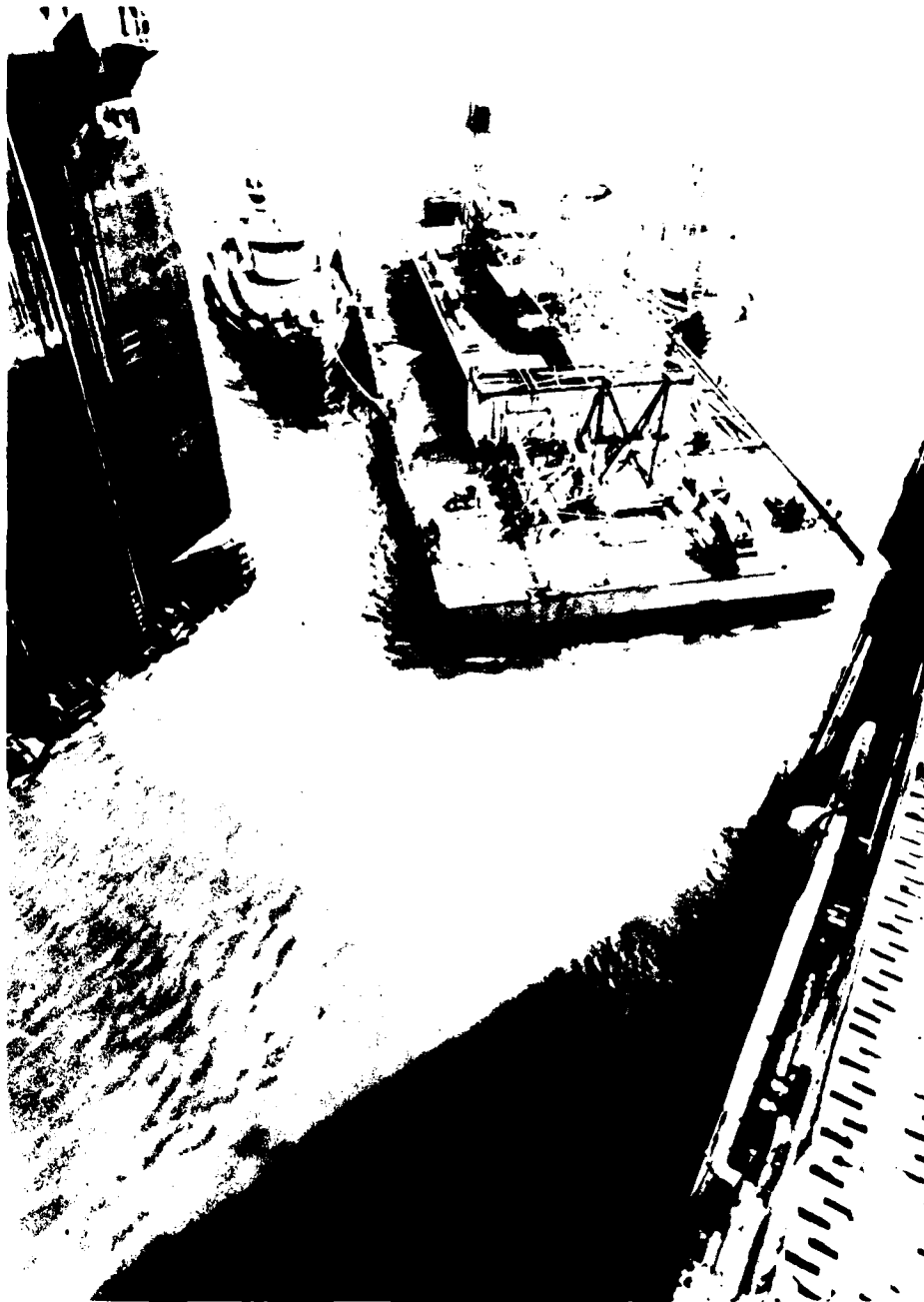




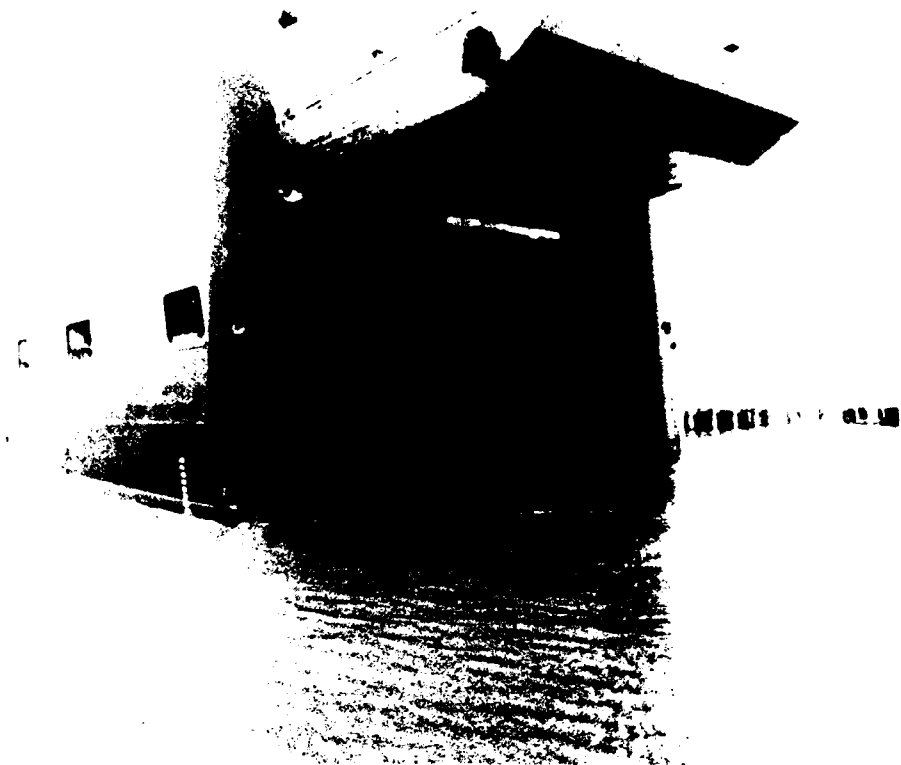
**ABOVE:** Two Army LARC-60's are positioned in the ships well over the lowered elevator in preparation for lift aboard ship.

**BELOW:** Container adapter frames are positioned on the ships elevator and lowered into the water to receive the Army's Temporary Container Discharge Facility (TCDF).

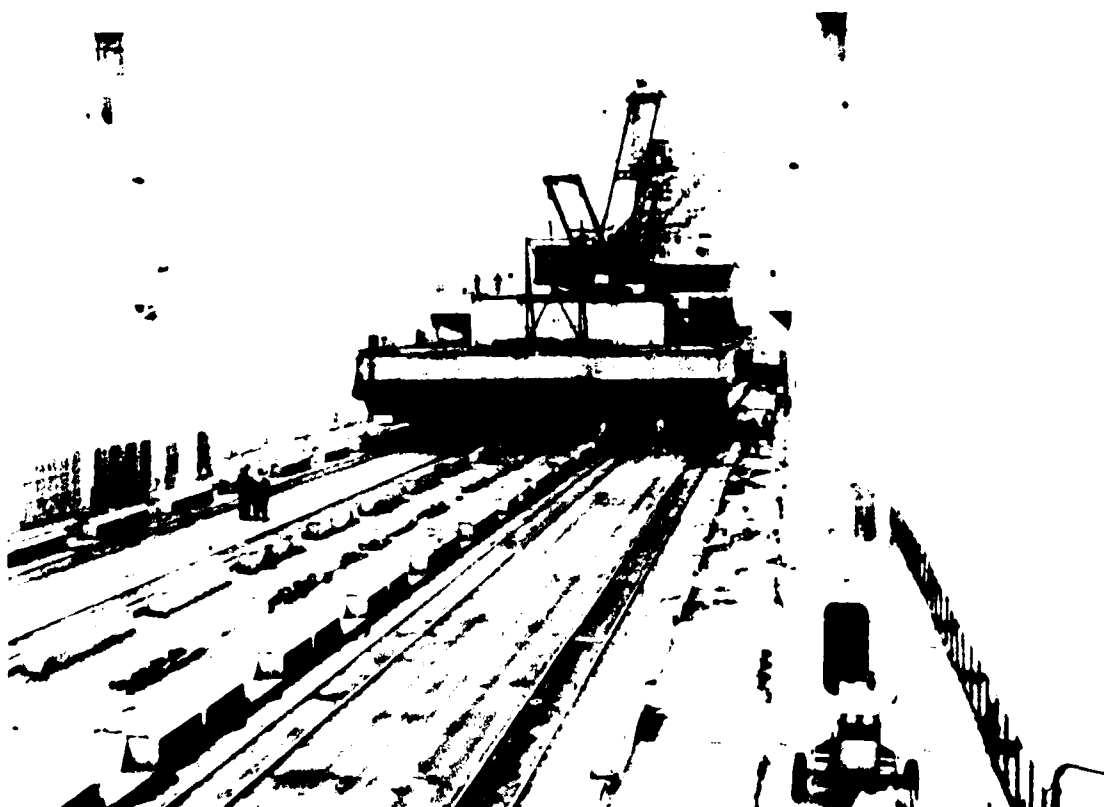


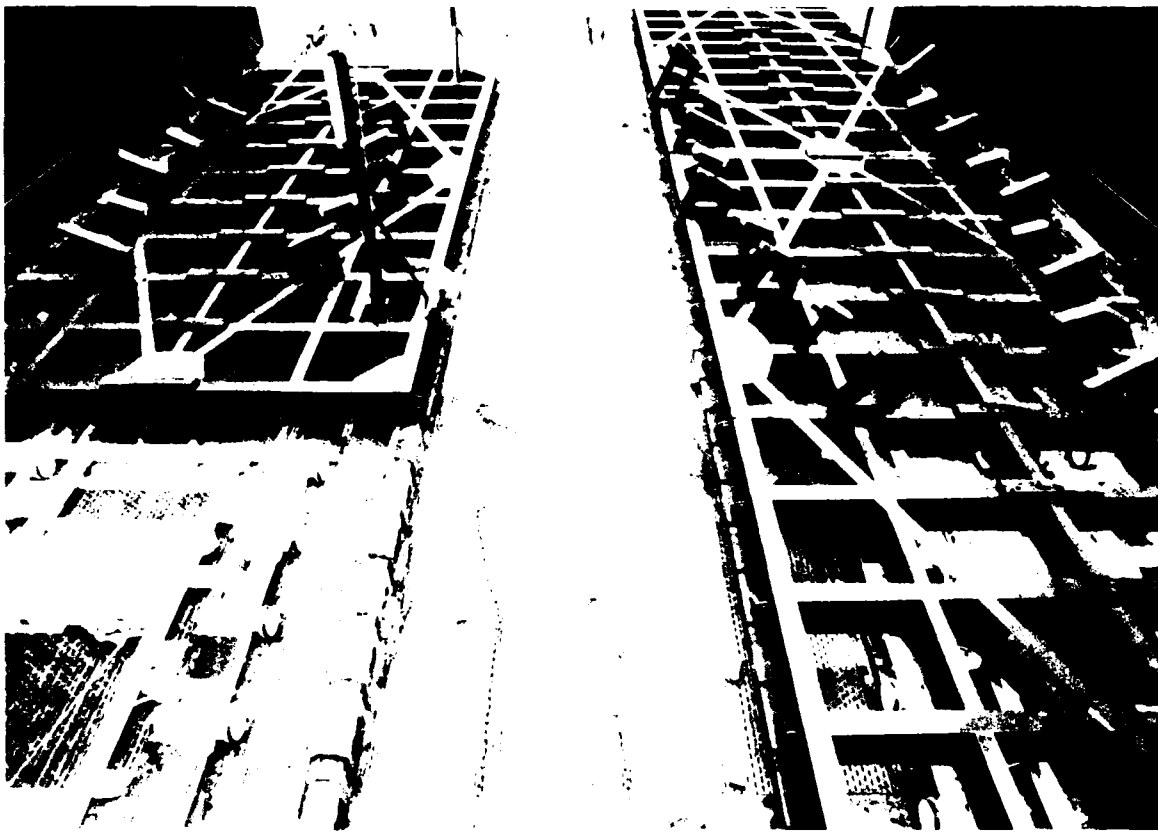


The Army's TCDF is maneuvered into the ships well with the aid of two Army tug boats.



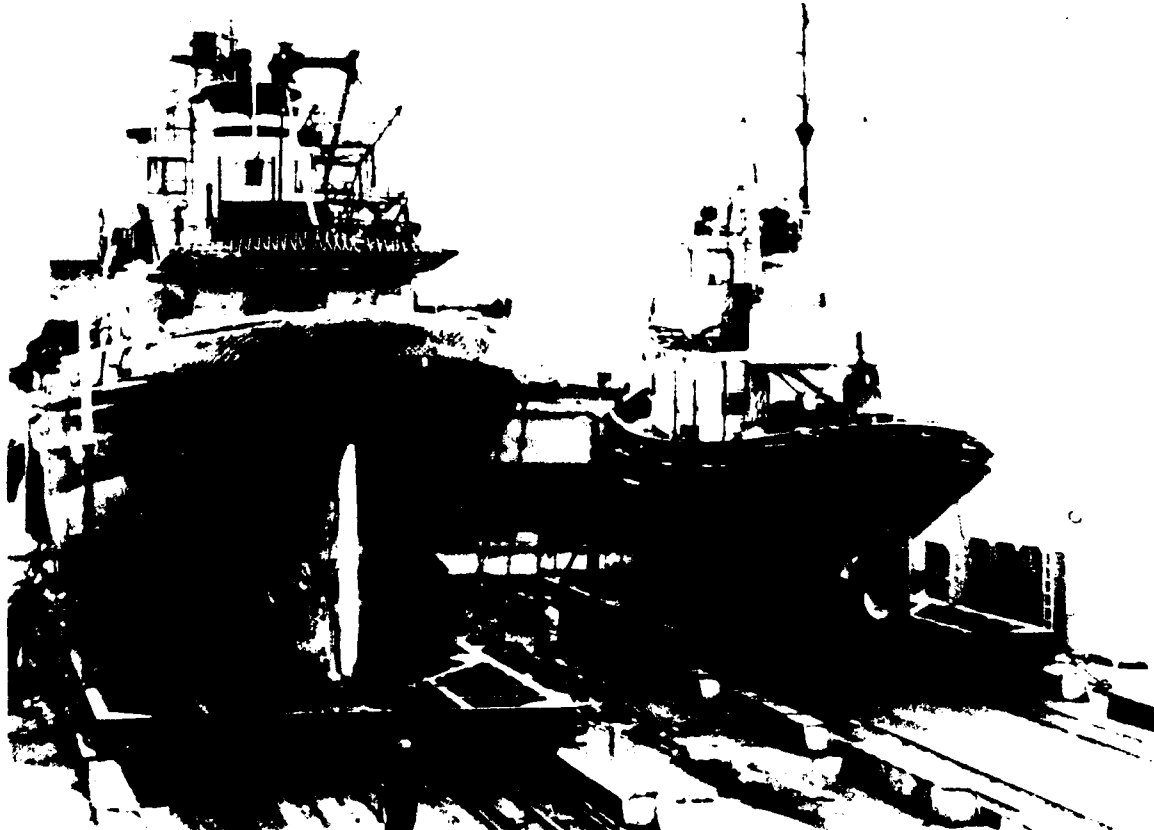
The TCDF is lifted out of the water (above) to the top deck (weather deck) and awaits movement forward by the ships transporters. The transporter system lifts the TCDF off the elevator (below) and moves the load along the deck of the ship to its stowage location.





**ABOVE:** Cradles for lifting of the Army's 100 and 65 foot tug boats are positioned on the ships elevator in preparation to receive craft.

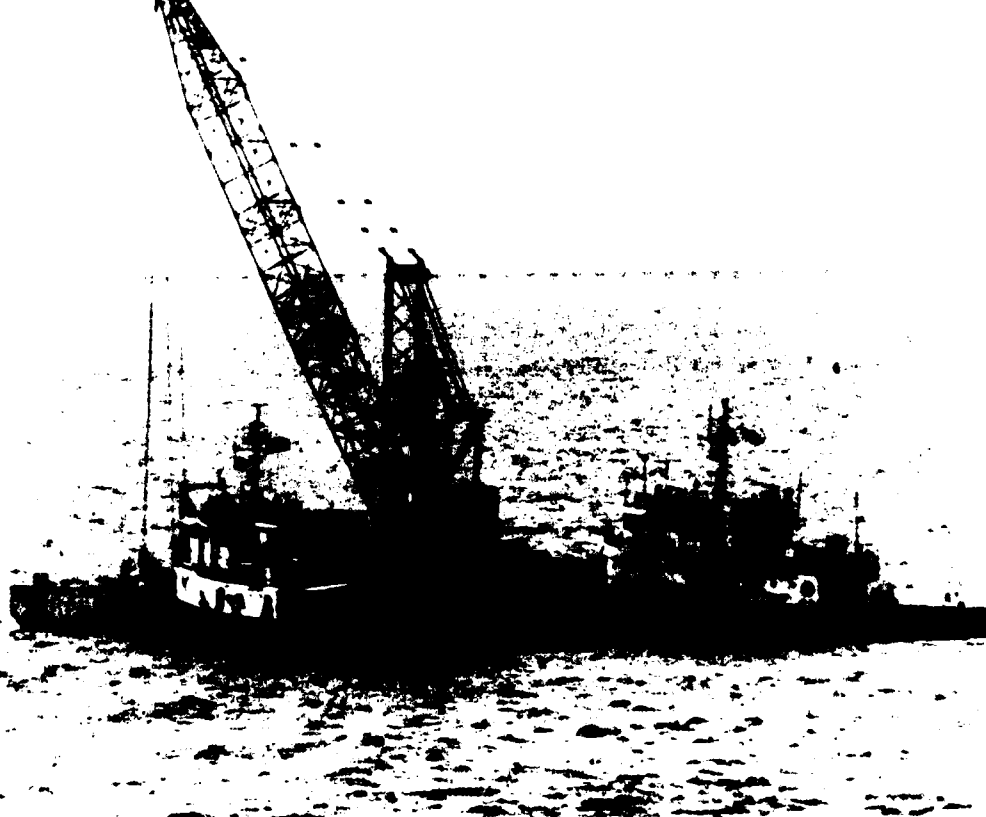
**BELOW:** Tug boats as they appear in cradles in their stowage location on the deck of the ship.

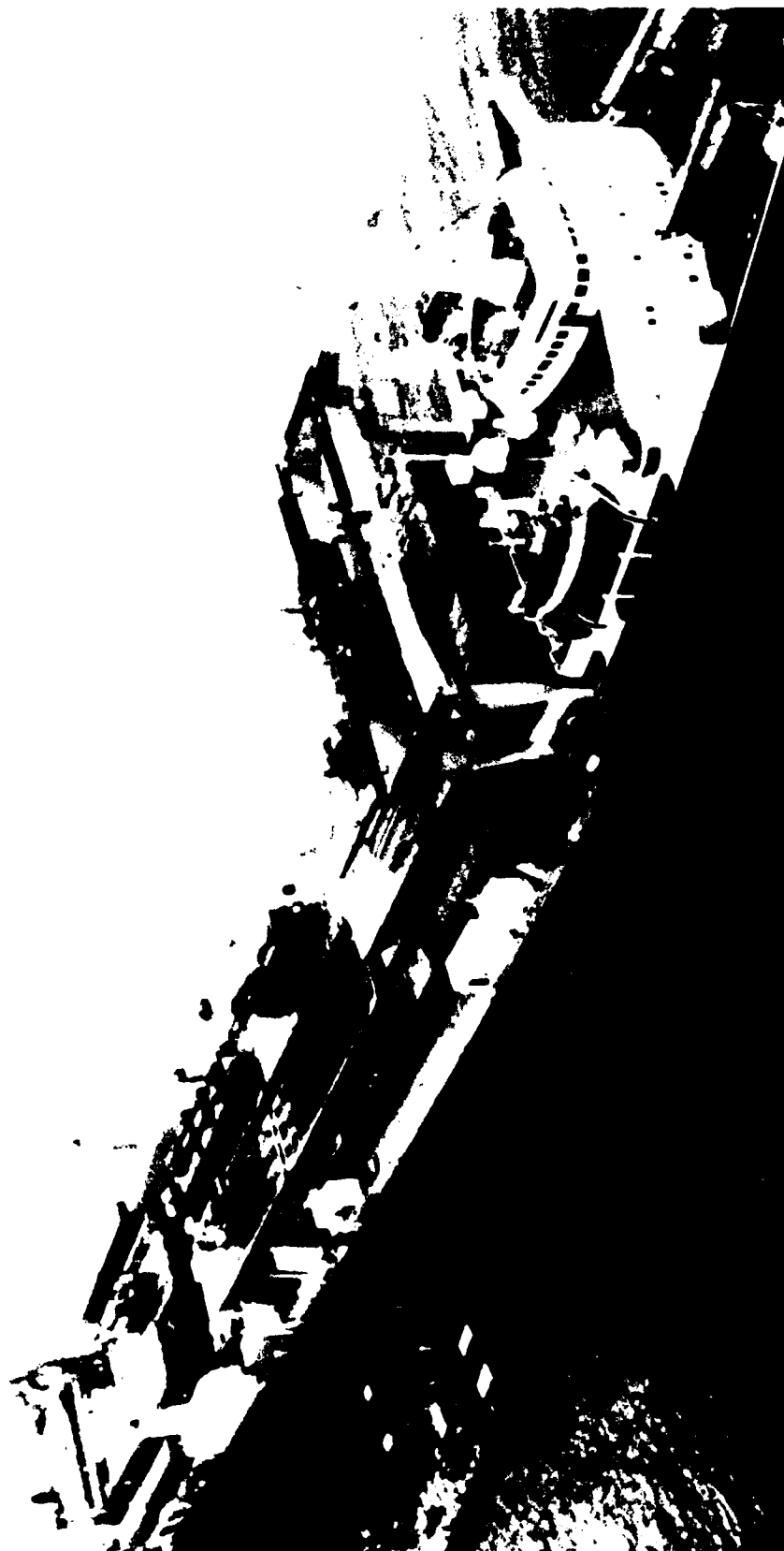




**ABOVE:** Army LCU's depart the ships well as the first loads to be offloaded while at anchorage off Fort Story, Virginia.

**BELOW:** The TCDF is offloaded and departs the area with assistance from two Army tug boats that were offloaded earlier.



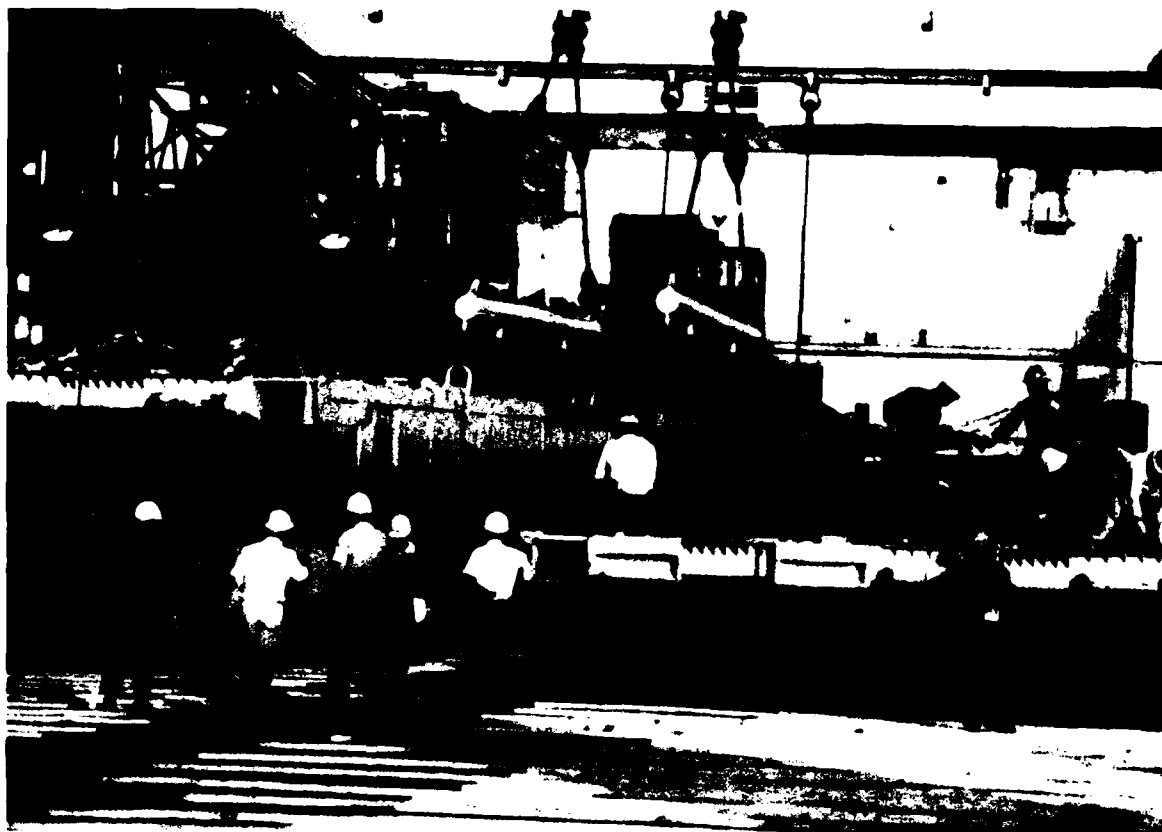


The LASH ship LASH PACIFICO loaded with Navy equipment at anchorage off Fort Story, Virginia prepares to commence offload operations.

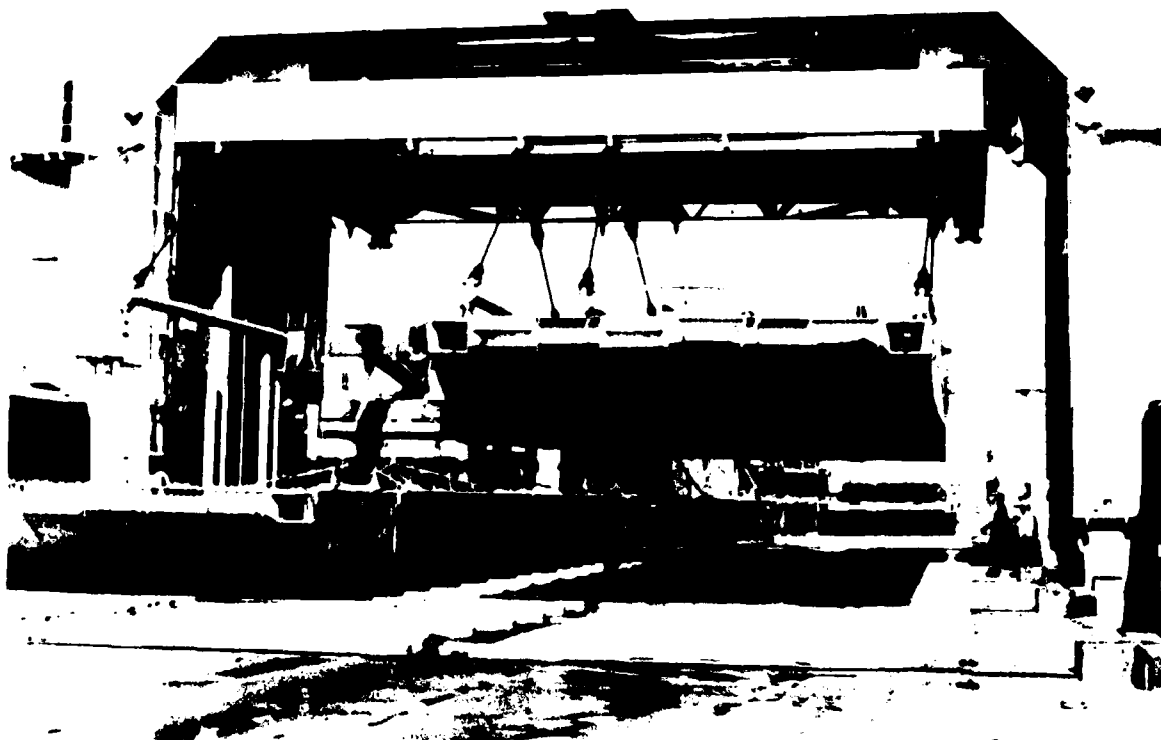


Causeway sections (above and below) with equipment lashed aboard are positioned under the ship's gantry crane in preparation for lift aboard ship.





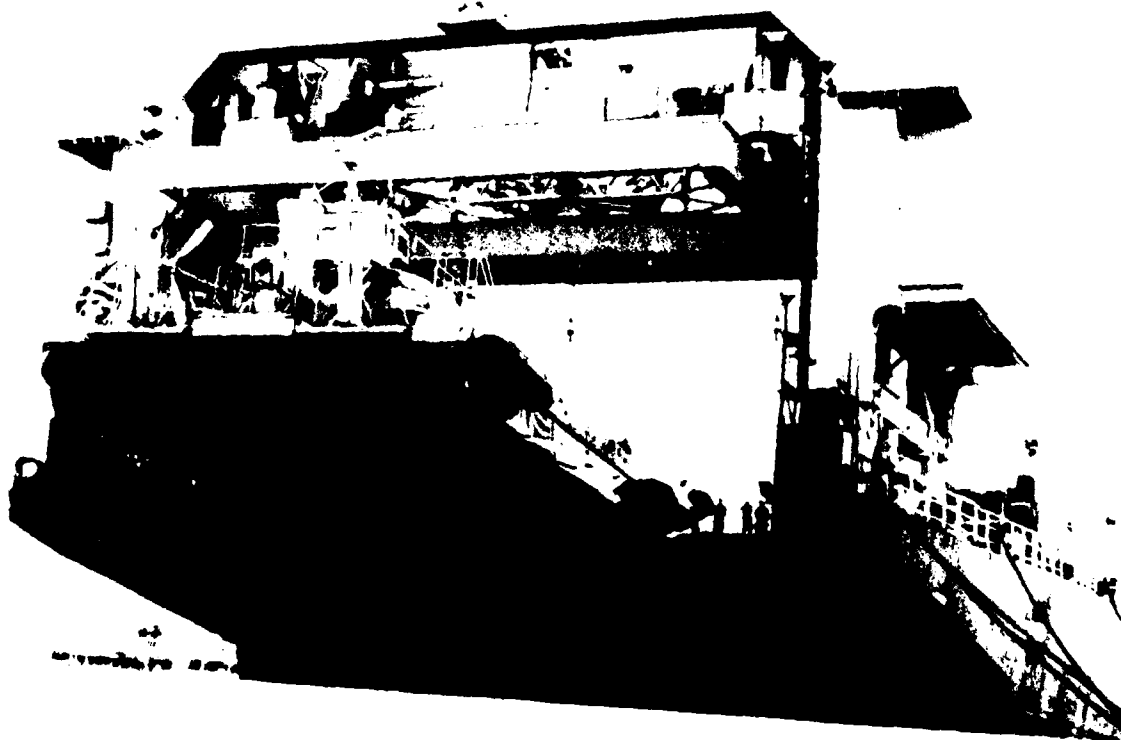
**Loaded (top) and empty (bottom) causeways are moved to stowage locations aboard ship after lift via the ship's gantry crane.**

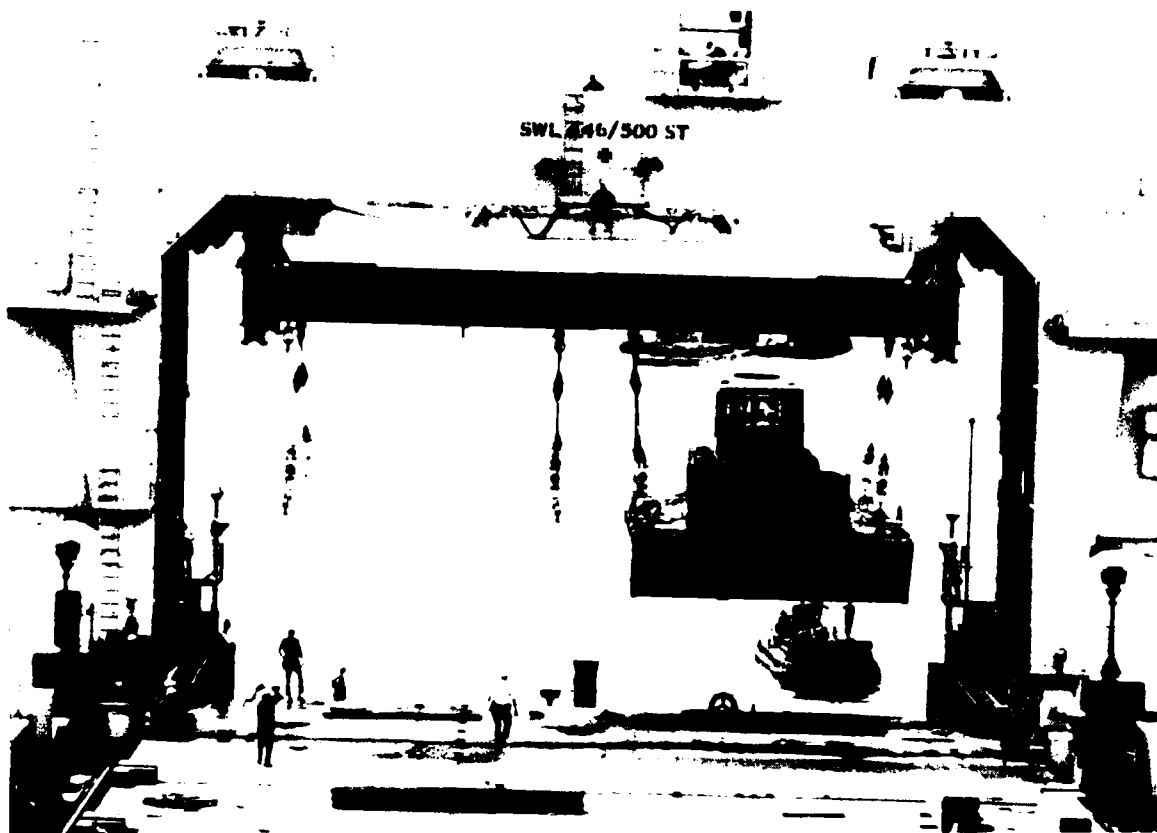




ABOVE: Empty causeway sections are stacked atop one another on the deck of the ship to aid in conserving space.

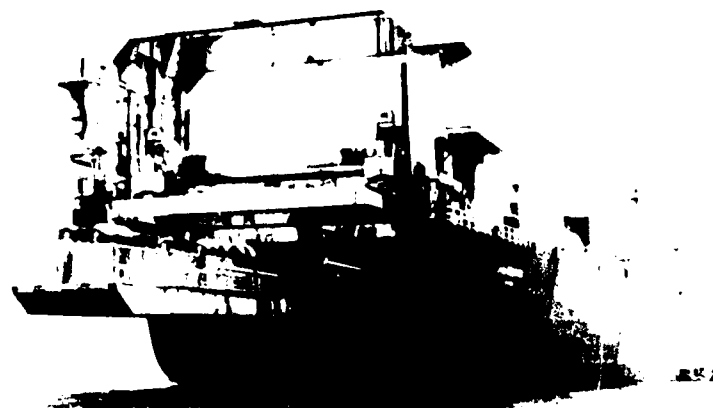
BELOW: An Army LACV-30 is lifted using the ship's gantry crane and is the last piece of equipment to be loaded.

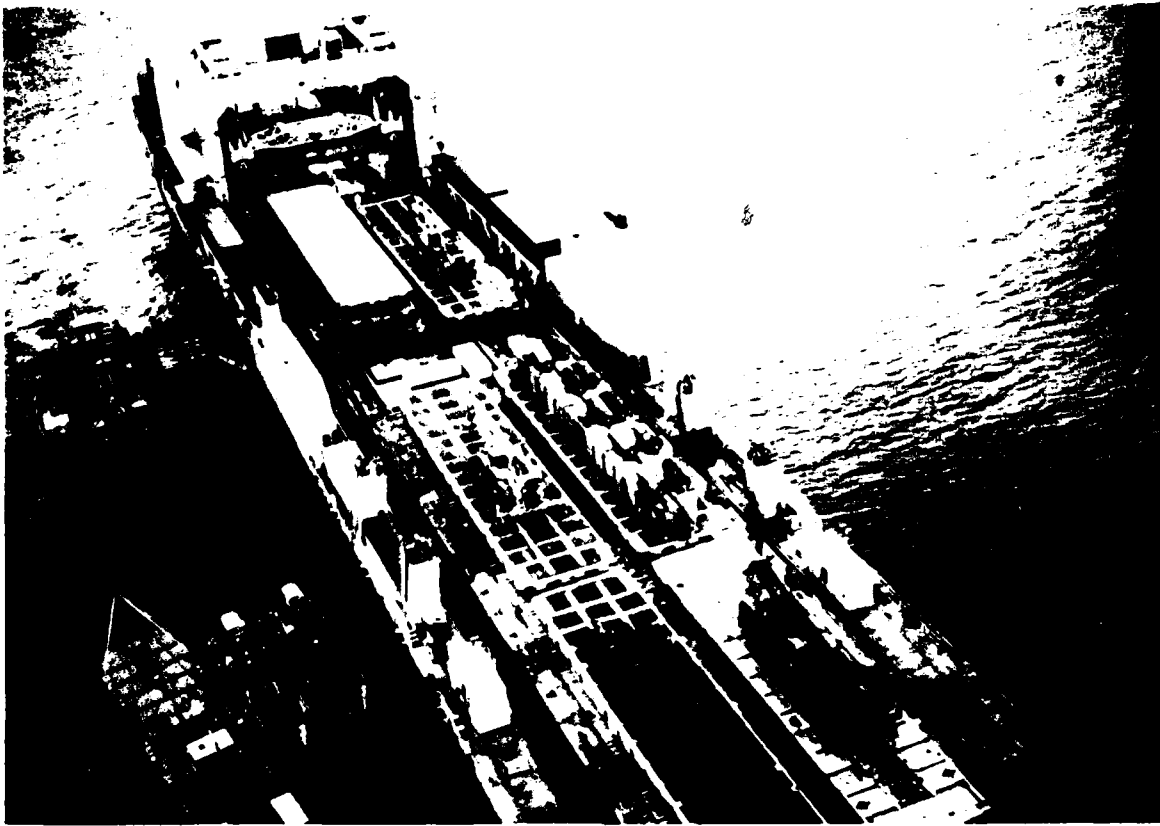




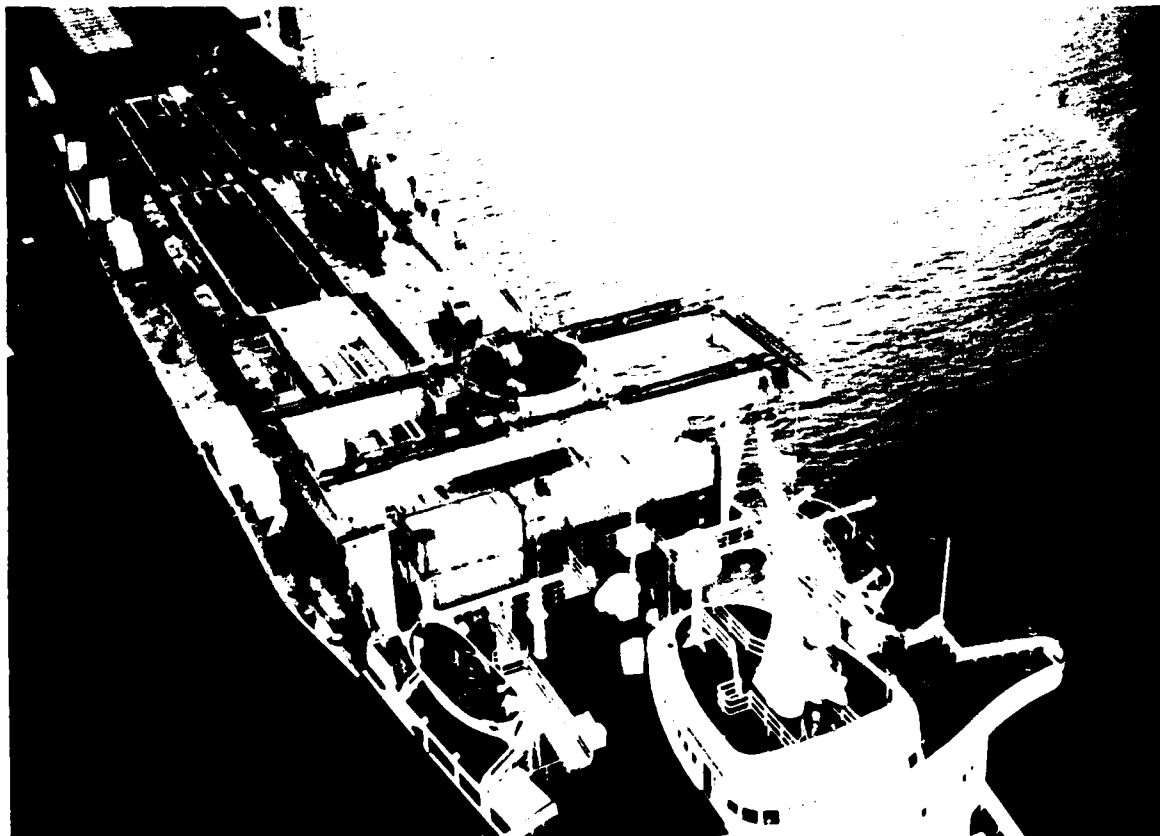
**ABOVE:** A causeway section with equipment secured aboard is positioned over the ship's well during the offload portion of the test.

**BELOW:** A causeway section with the ELCAS fendering system lashed aboard is placed in the water during offload operations.





An aerial view of the LASH ship LASH PACIFICO anchored off Fort Story shows equipment that is aboard to be offloaded.



## THROUGHPUT TEST

The purpose of the Throughput Phase of JLOTS II was to evaluate the Services' capabilities to discharge containers, breakbulk cargo, and bulk POL from commercial ships at off shore anchorages utilizing several cargo handling systems that have been developed over the past 10 years.

The Throughput Test was conducted during the months of September and October 1984 at Fort Story, Virginia. This time frame was selected in order to experience increased sea state conditions. Over 3,000 personnel from all four Services and the U.S. Coast Guard participated in this joint test and evaluation program sponsored by the Department of Defense and consisted of more than 30 days of "around-the-clock" operations.

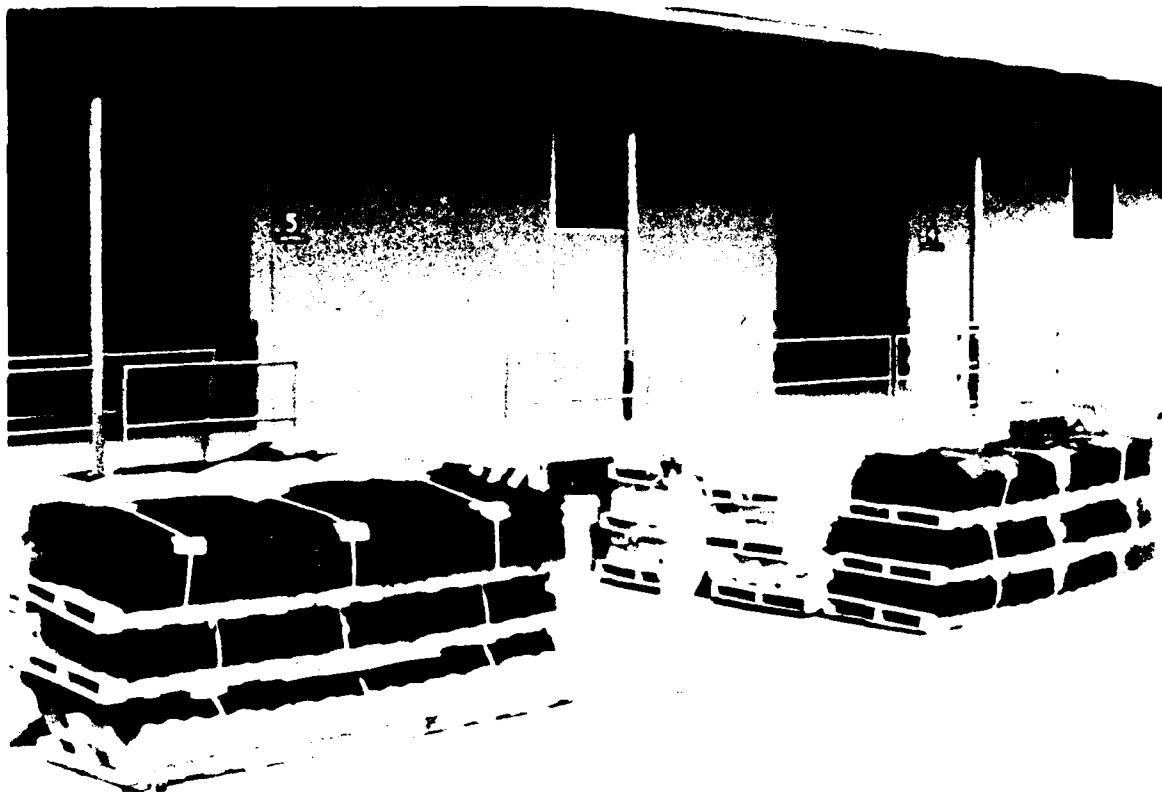
As in any test, the levels of performance in individual subsystems varied considerably. The following points reflect major results of the Throughput Phase of JLOTS II:

1. The demonstrated capability of the Services to discharge containerized and palletized cargo on a sustained basis is limited to sea conditions of Sea State 2 and below (Pierson and Moskowitz scale). Although limited cargo movement could continue in State 3, a number of improvements to equipment and refinement of procedures are required in order to achieve greater cargo throughput rates.
2. The demonstrated capability to transfer bulk POL products from ship to shore was extremely limited or almost nonexistent. Accordingly, the Army and the Navy should vigorously pursue the development of POL systems capable of greater stand-off distances and adequate mooring systems for commercial tankers that can reliably transfer bulk POL products to the shore.

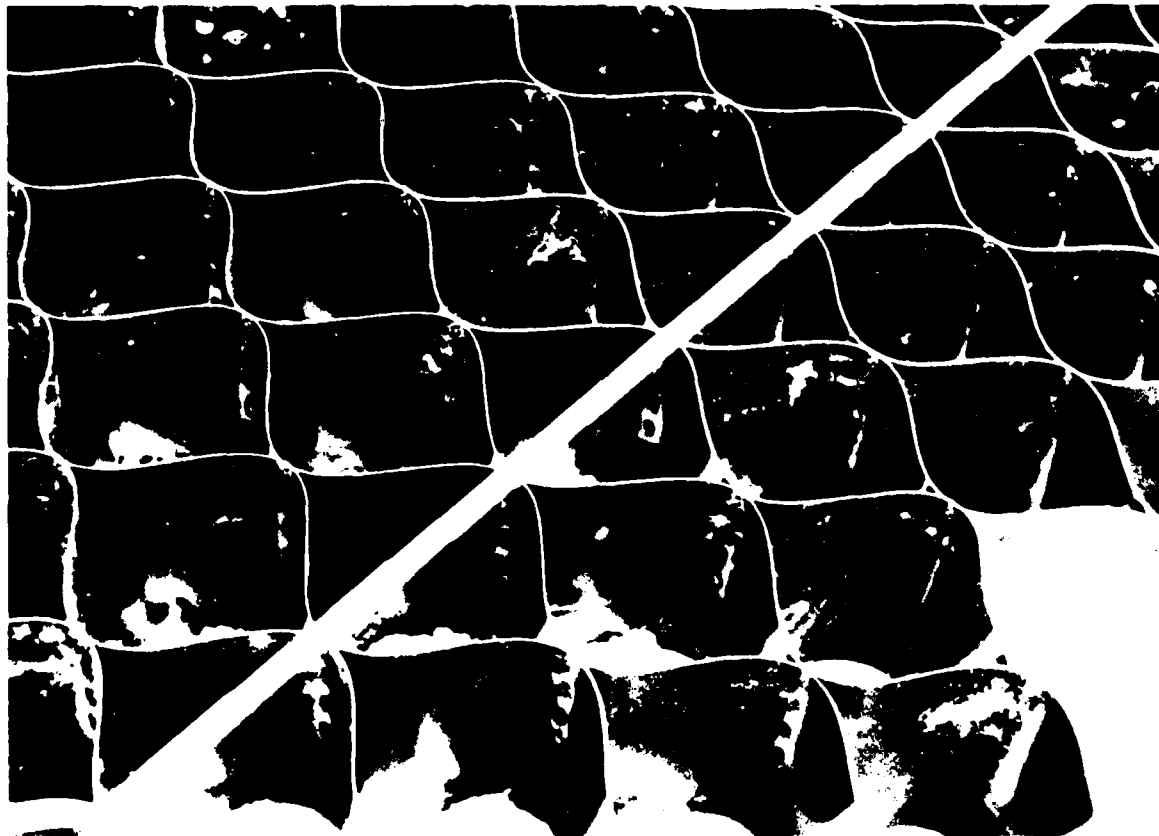


The T-ACS 1, KEystone STATE, the first ship of its type, with the container ship EXPORT LEADER moored alongside, conducting container offload operations during the Throughput Phase of JLOTS II.





The six stacks of Sand Grid pictured above will make up one mile of temporary roadway. When a Sand Grid section is expanded, (below) the dimensions are 8' wide×20' long×8" deep with each honeycomb measuring 6" in diameter.





**ABOVE:** Aerial view of the Sand Grid road system after sections have been placed on a cleared beach.

**BELOW:** Once Sand Grid is filled with sand and packed down with a roller, an asphalt topping is applied to complete the installation.





**ABOVE:** Sand Grid as it appeared on the beach after a severe storm with high tides destroyed the roadway system.

**BELOW:** Mobility Matting (Mo-Mat) was interconnected with the Sand Grid roadway on the beach.

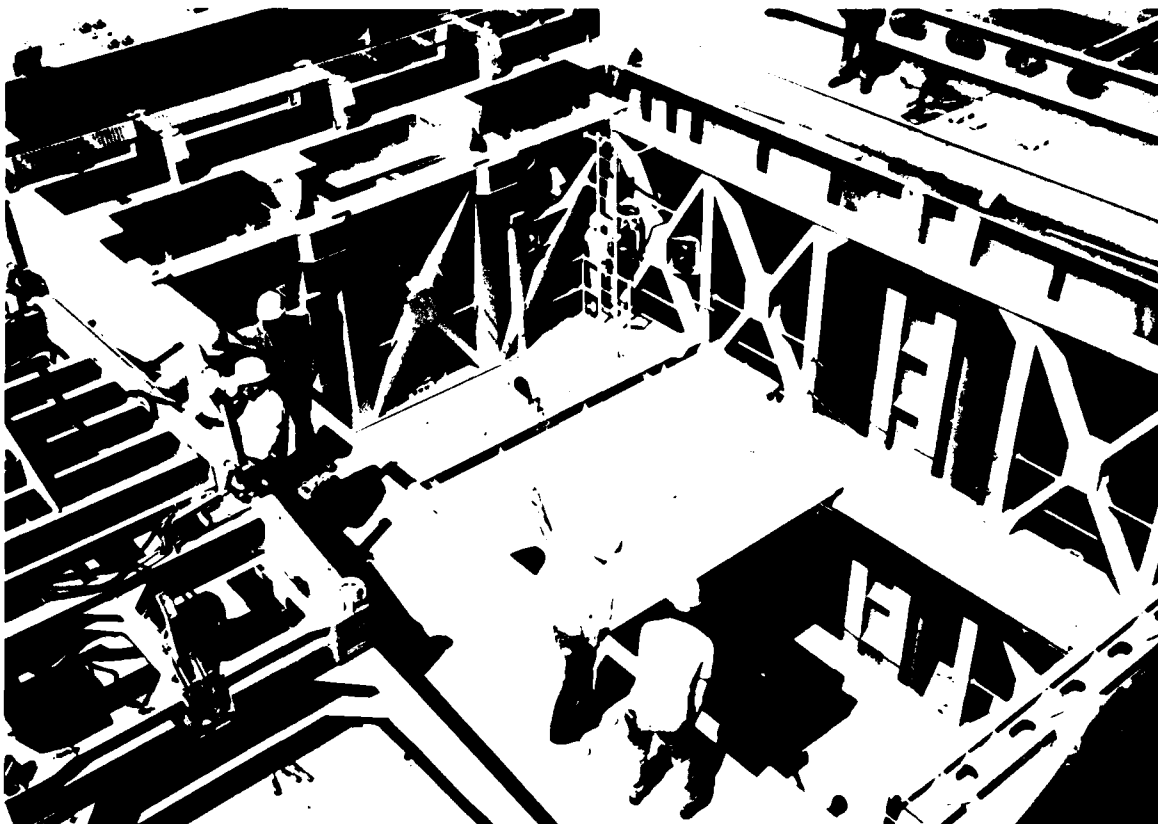




**ABOVE:** The container ship EXPORT LEADER is docked at the Norfolk Terminal loading stuffed containers that will be used during the Throughput Test.

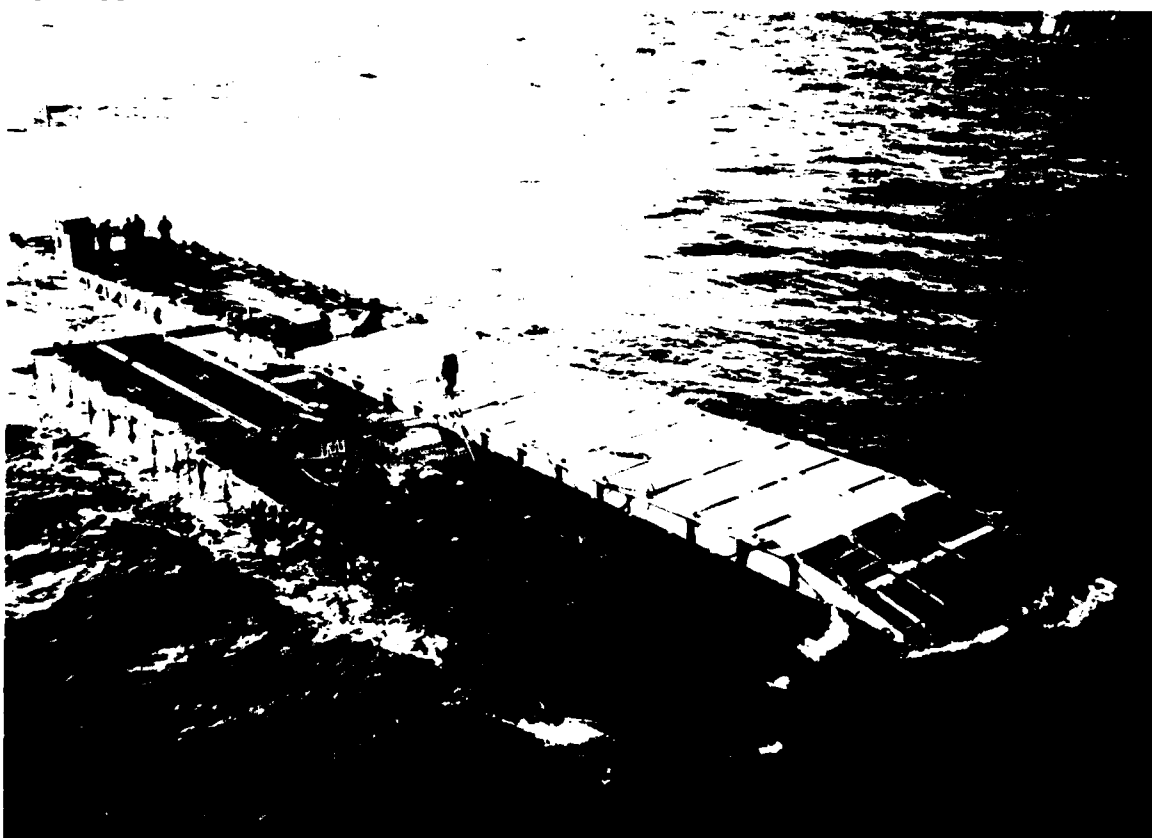
**BELOW:** The Navy's Elevated Causeway (ELCAS) undergoes installation at Fort Story during adverse weather conditions.

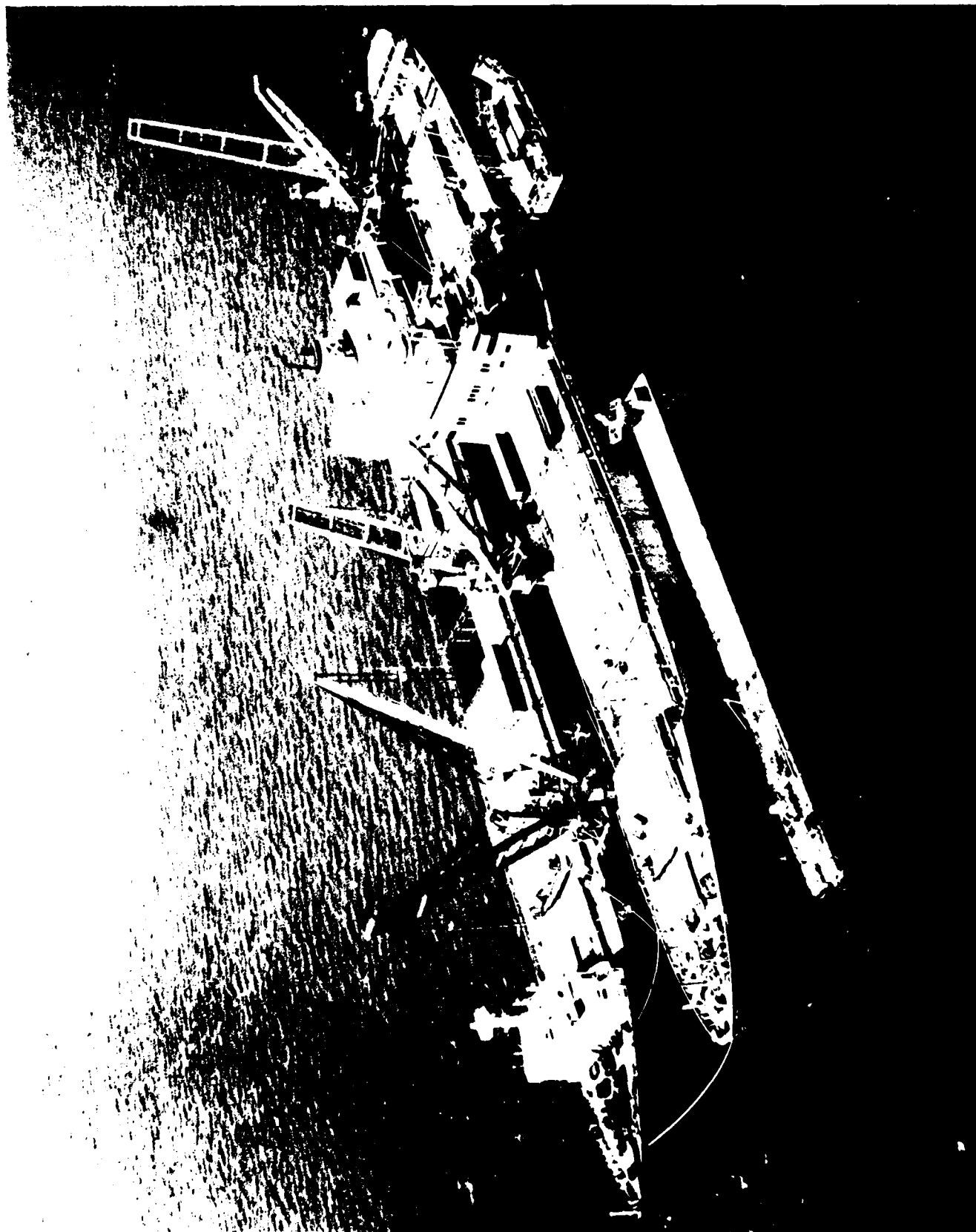




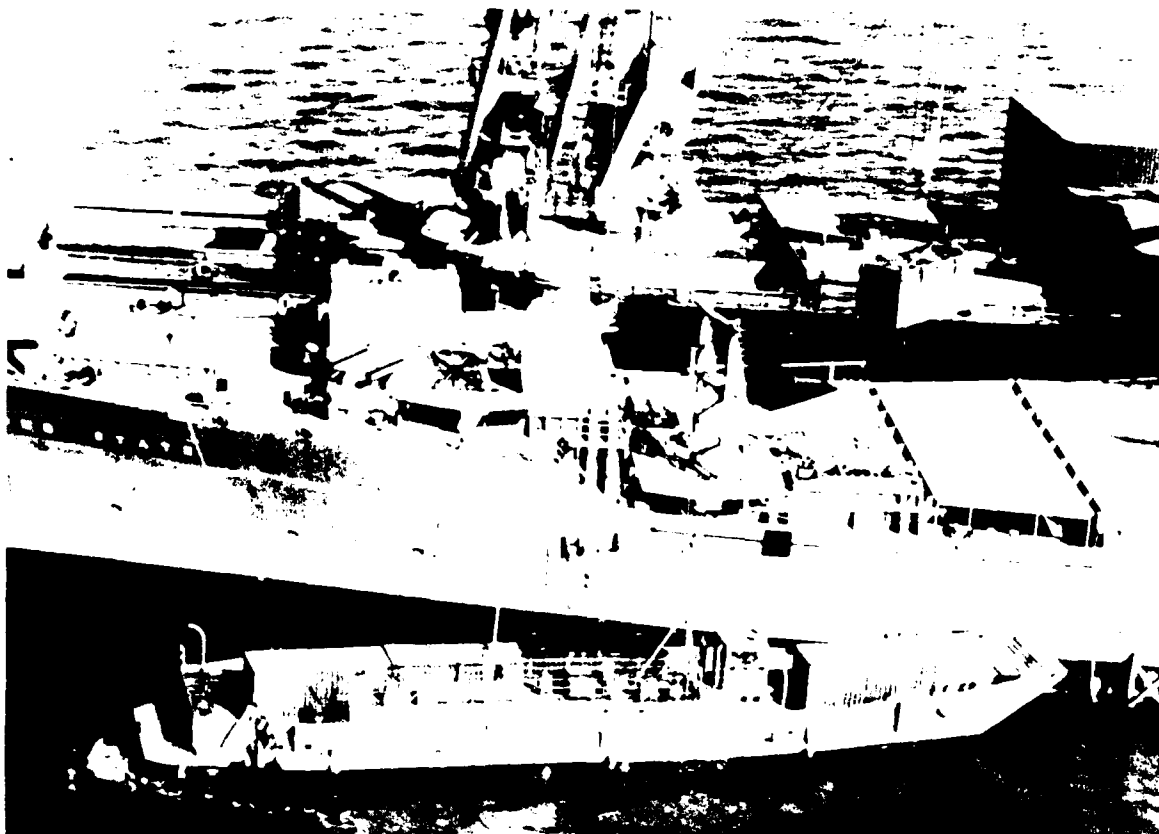
**ABOVE:** Opening the deck of a sea shed aboard the T-ACS prior to offloading a modular causeway section used in the test.

**BELOW:** The modular causeway section is moored to a powered causeway ferry after offload from the T-ACS.



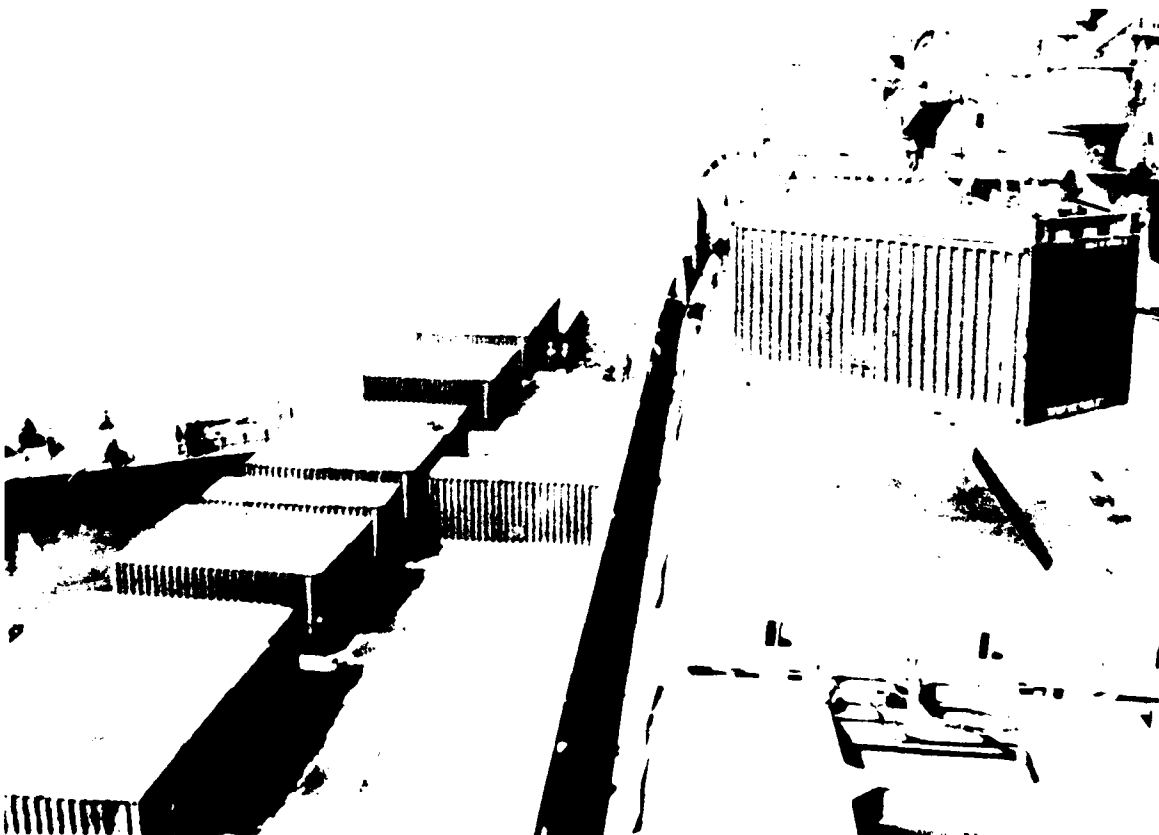


The container ship EXPORT LEADER is moored alongside the crane ship KEYSTONE STATE for discharging containers onto a causeway ferry and an LCU during offload operations.



**ABOVE:** An LCU is moored alongside the **KEYSTONE STATE** receiving containers in such a manner as to be offloaded at the beach using a Lightweight Amphibious Container Handler (LACH).

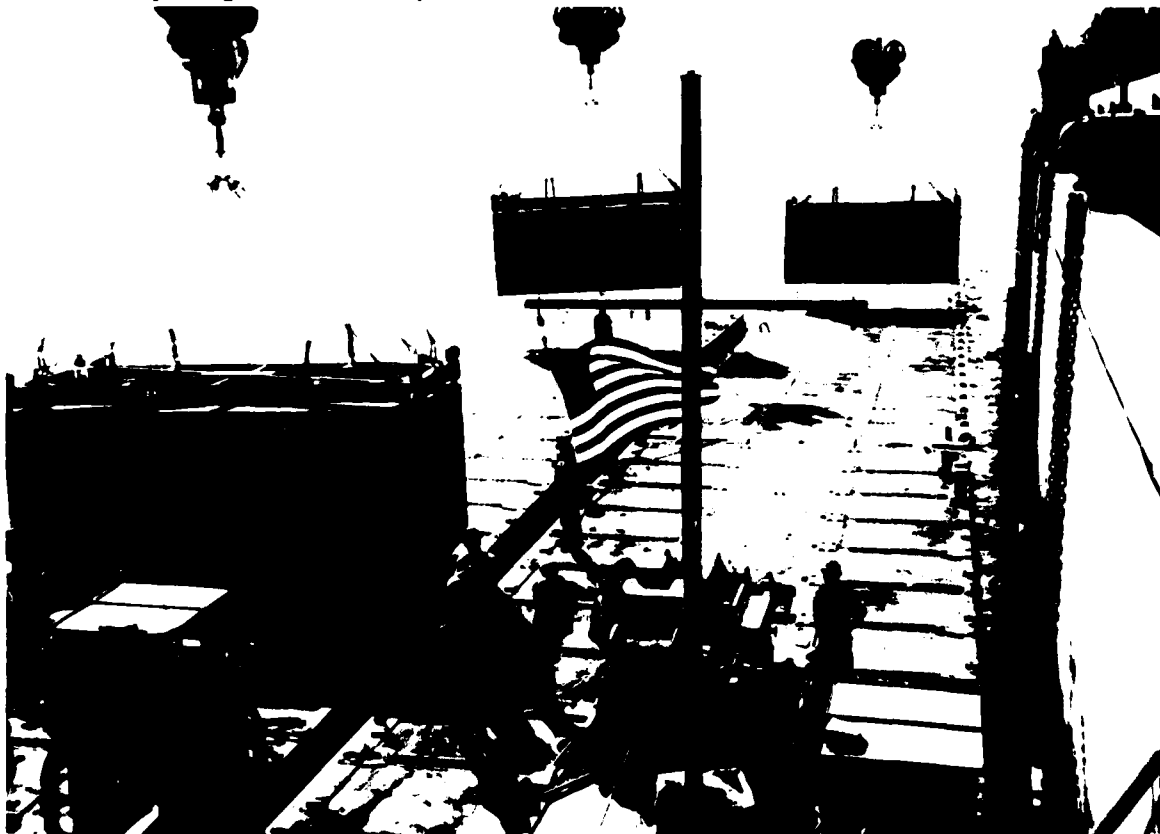
**BELOW:** Two causeway ferries are moored alongside the crane ship and receive containers at the same time during offload operations.

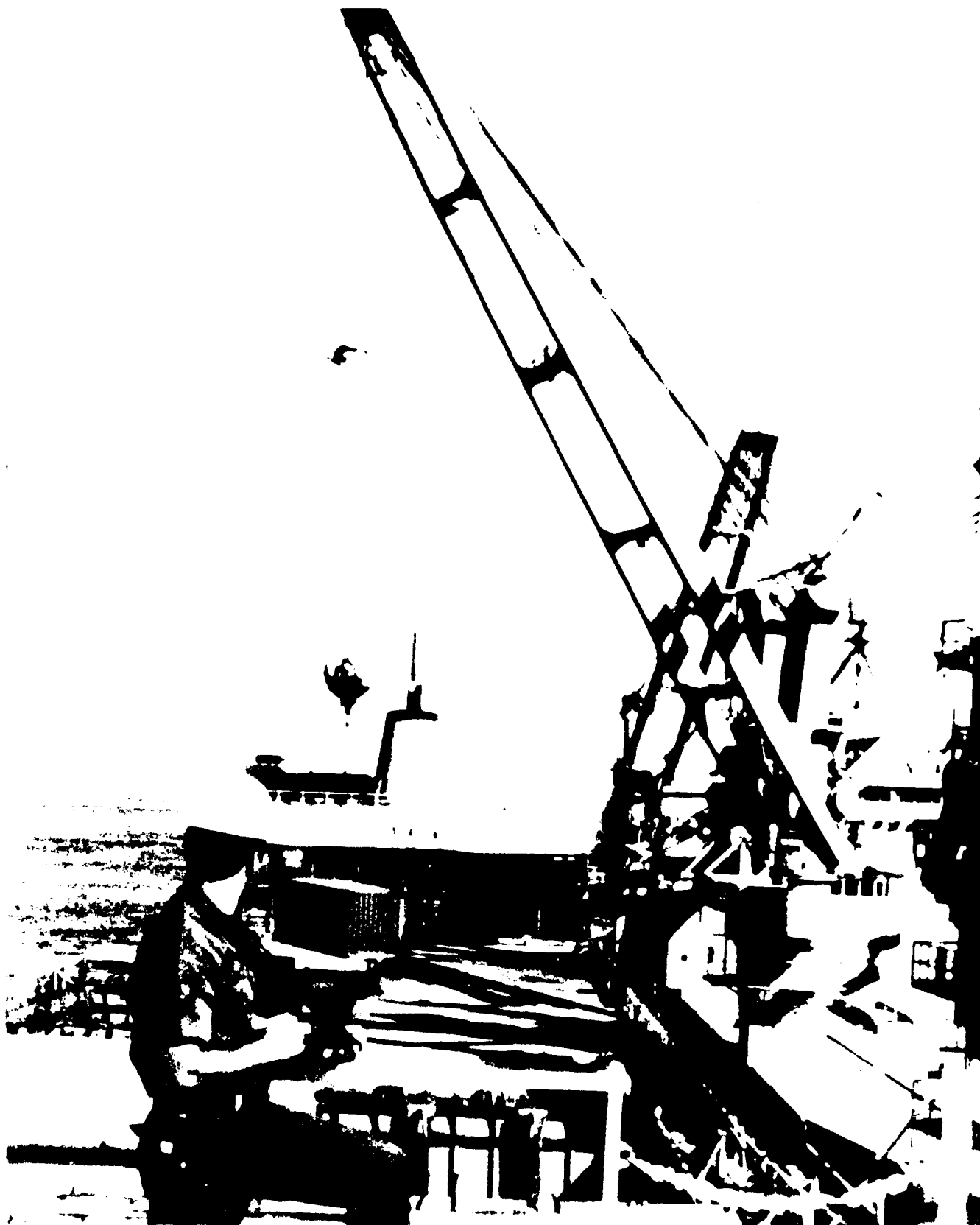




**ABOVE: A container is moved from the container ship and experiences severe pendulation caused by increased sea state conditions.**

**BELOW: Two causeway ferries are moored alongside the crane ship and are loaded with containers by using three of the ships cranes.**

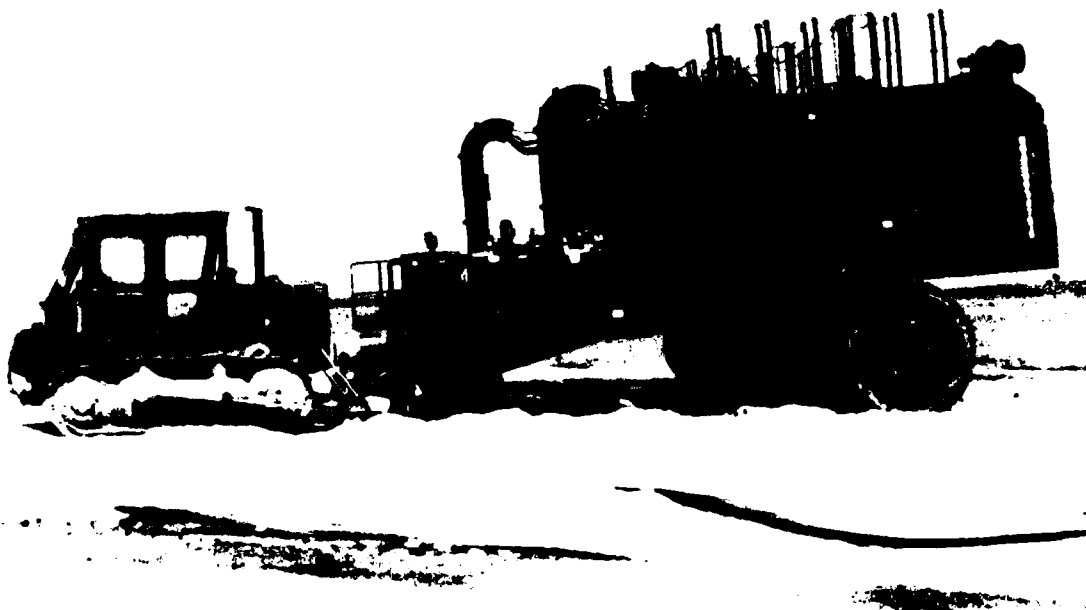


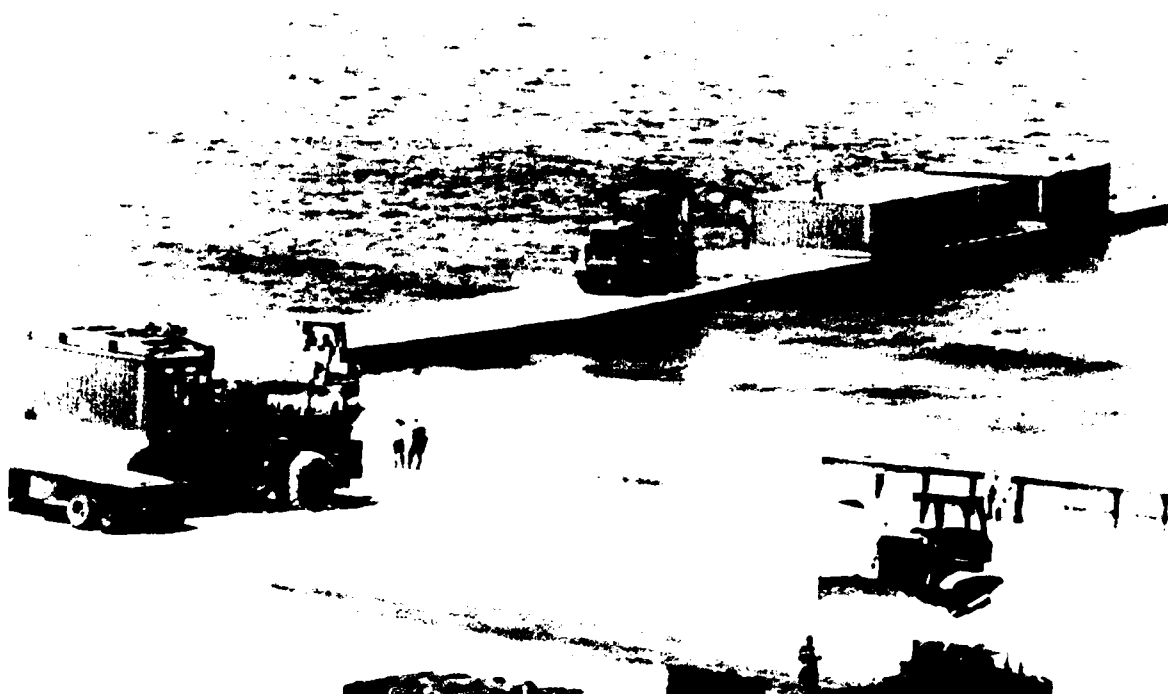


A data collector transmits information on the movement of a container from EXPORT LEADER by a hand held data terminal radio.



**A LACH offloads a beached LCU in the surf zone (above) during throughput operations and positions itself on the beach (below) to load the container onto a waiting truck.**

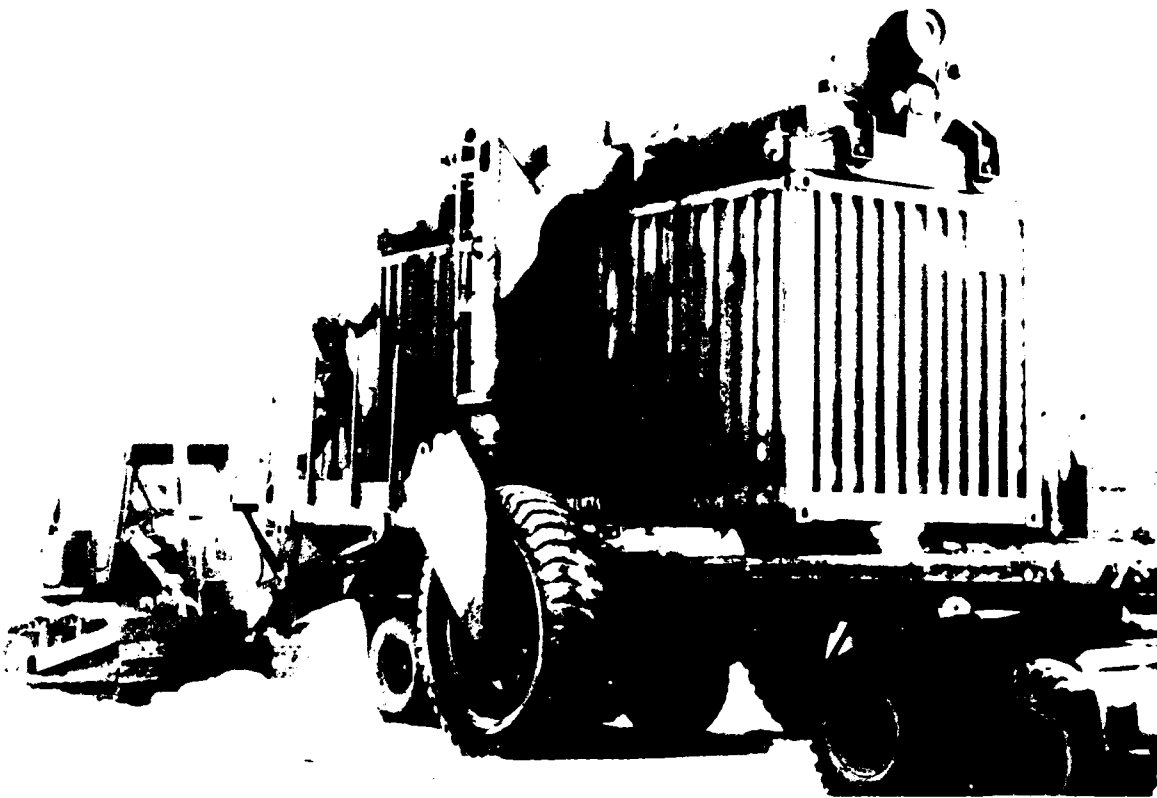




**ABOVE:** Two RTCH's are used to offload a causeway ferry in the surf zone at the beach and load the containers onto vehicles in the loading area.

**BELOW:** A RTCH loaded with a container departs a beached causeway ferry during throughput operations.





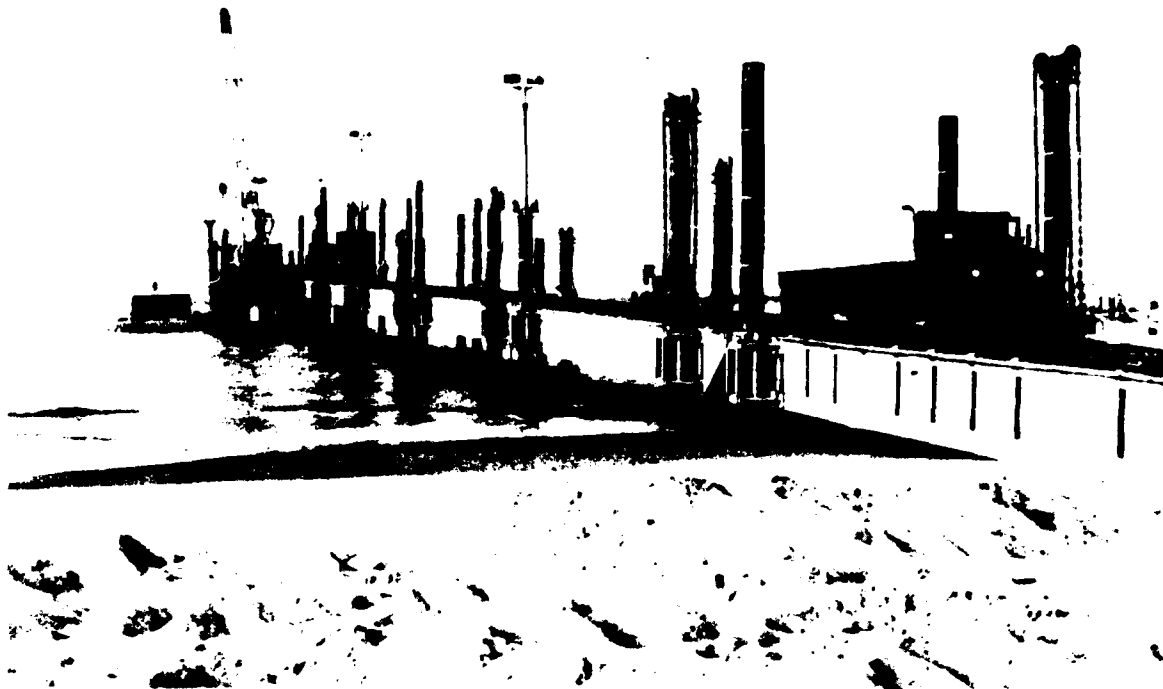
A LACH (above) positions a container over the bed of a trailer for loading and (below) a RTCH loads a container onto an awaiting trailer.





A RTCH (top) is used to offload the containers from trailers and the containers are then stacked in rows (bottom) in the marshalling yard.

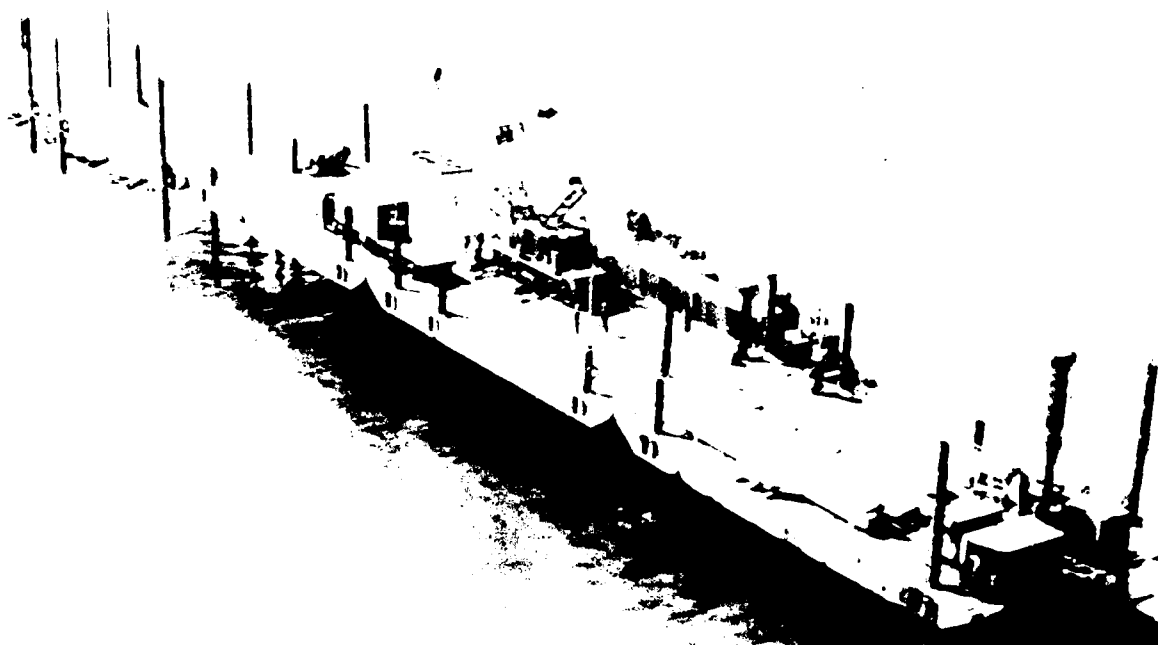




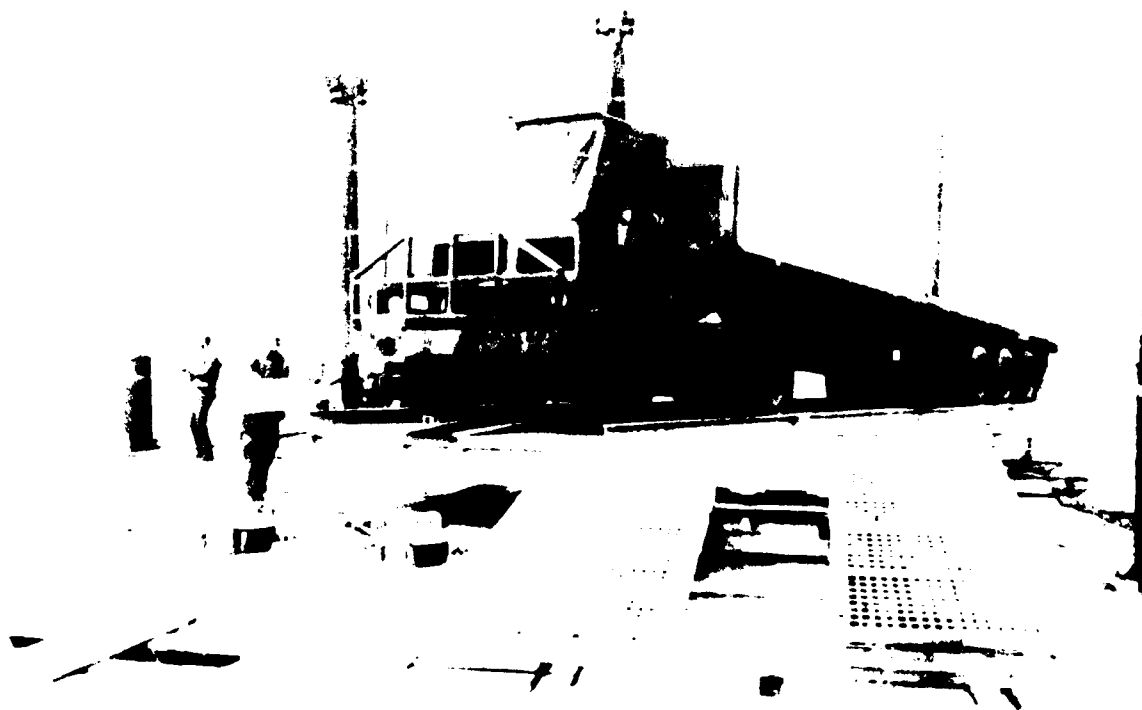
**Above: Causeway ferry moored alongside the ELCAS for container offload.**

**Below: Stationing assistance provided by pusher boat (LCM-6) due to increased wave action.**



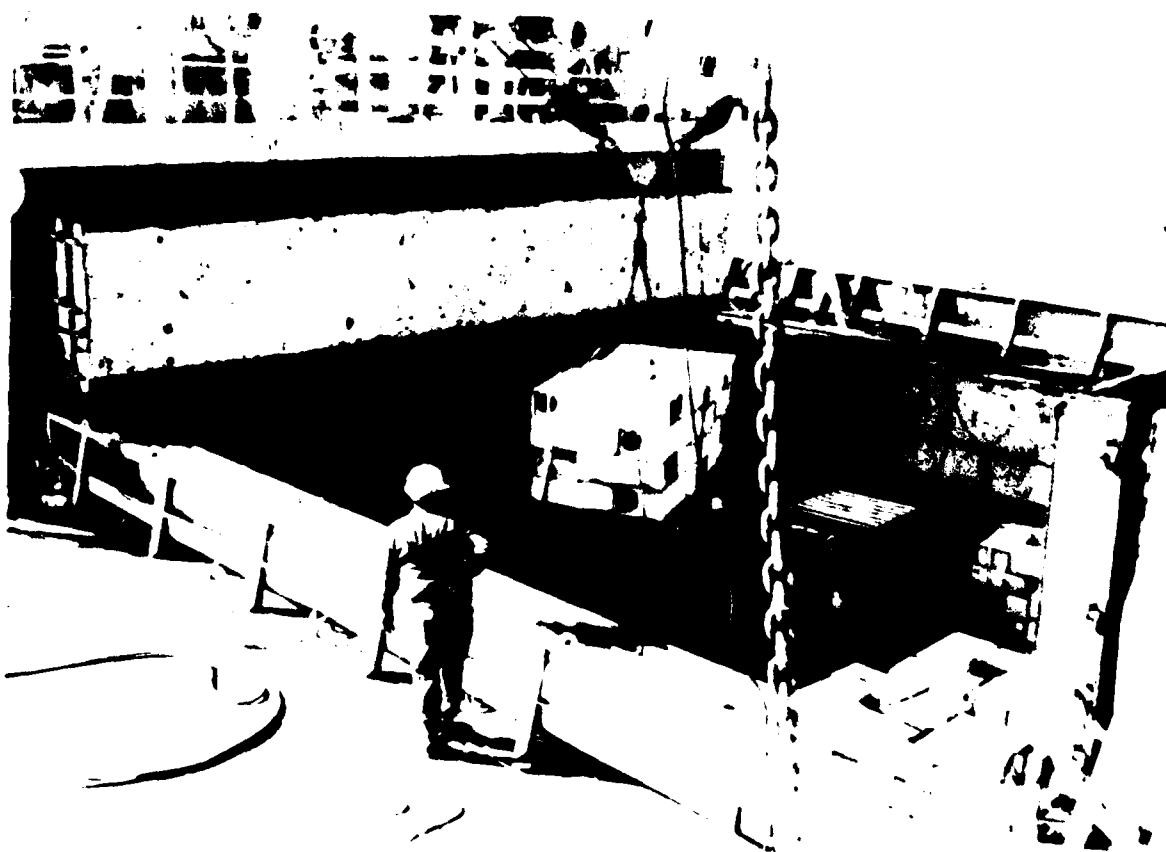


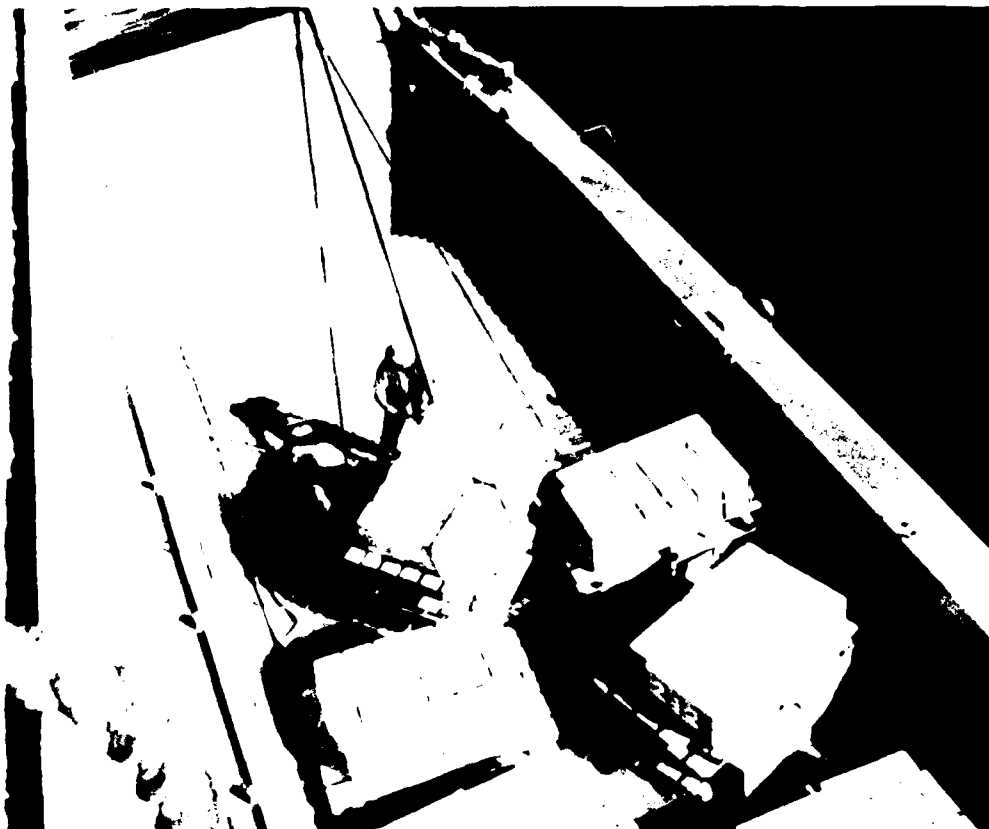
During the Army phase of throughput operations, an LCU is moored alongside the ELCAS (above) to offload containers onto waiting vehicles. An air operated turntable is mounted at the end of the ELCAS (below) and is used to turn vehicles around and then stage to receive containers.





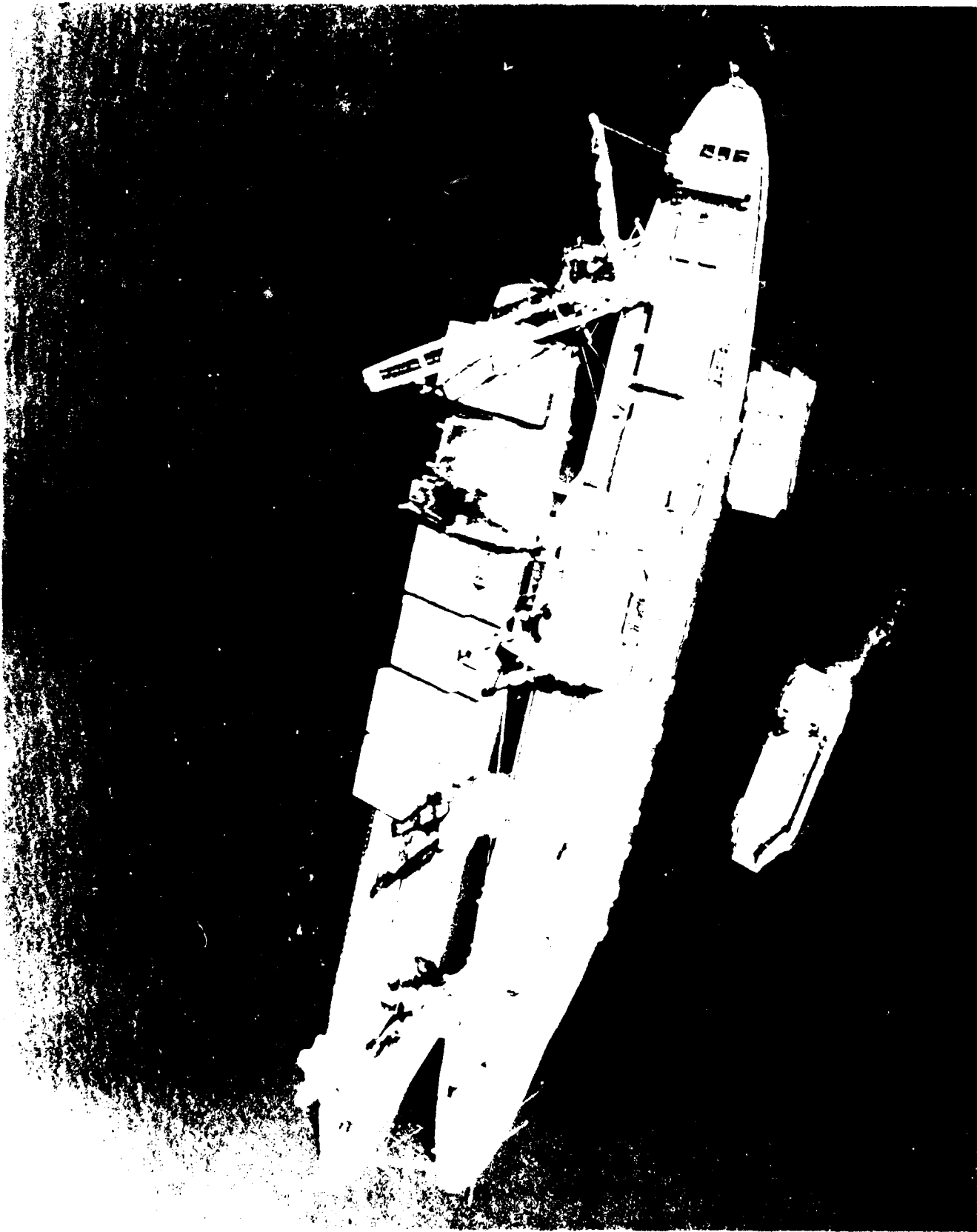
The breakbulk ship CAPE ANN (top) is anchored offshore at Fort Story, Virginia conducts breakbulk offload operations (bottom) onto waiting lighterage.



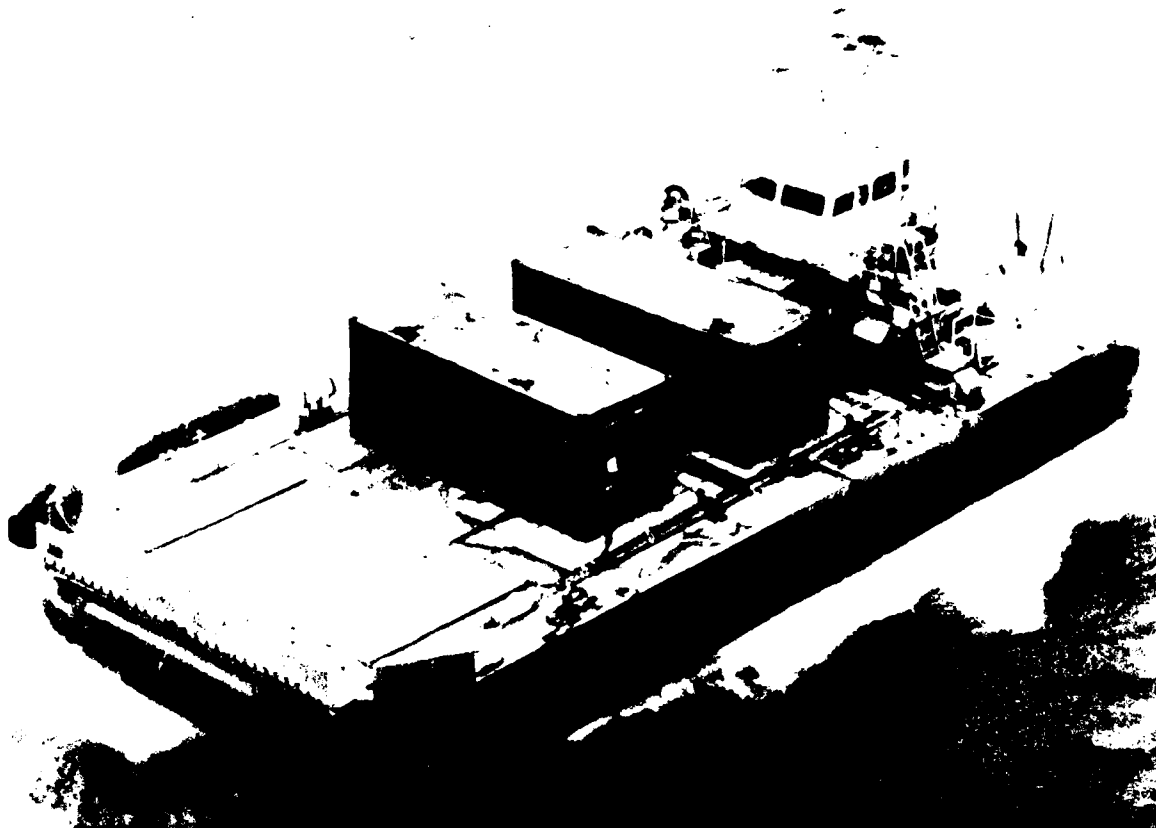


Breakbulk cargo (above) is loaded into an LCM-8 at the breakbulk ship CAPE ANN. A beached LCM-8 (below) loaded with breakbulk cargo is offloaded by a rough terrain forklift and cargo is placed on waiting trucks.

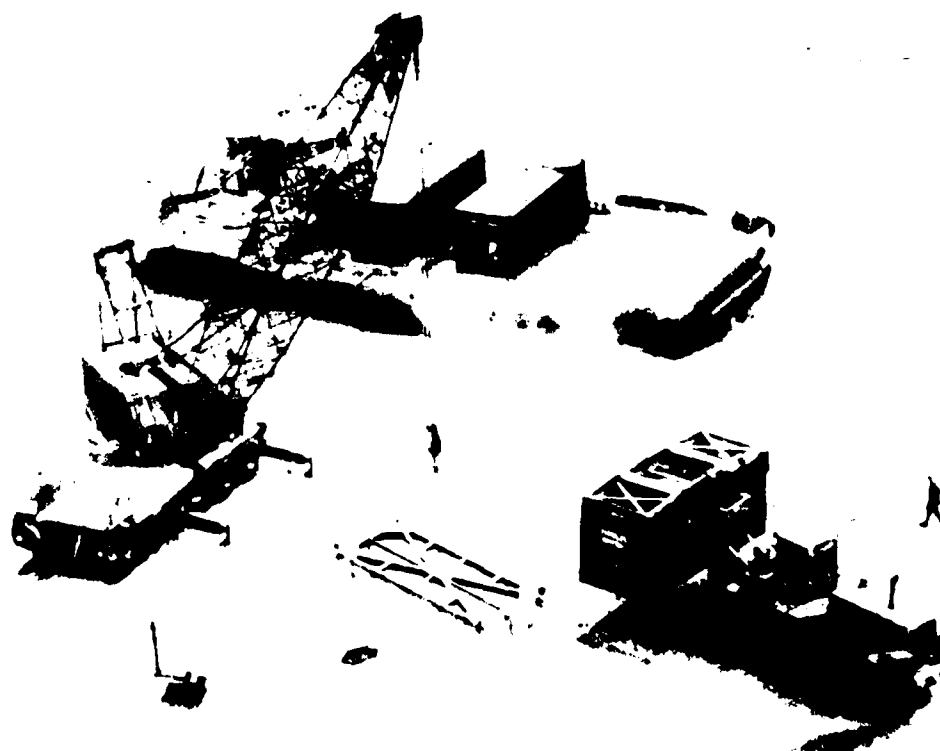


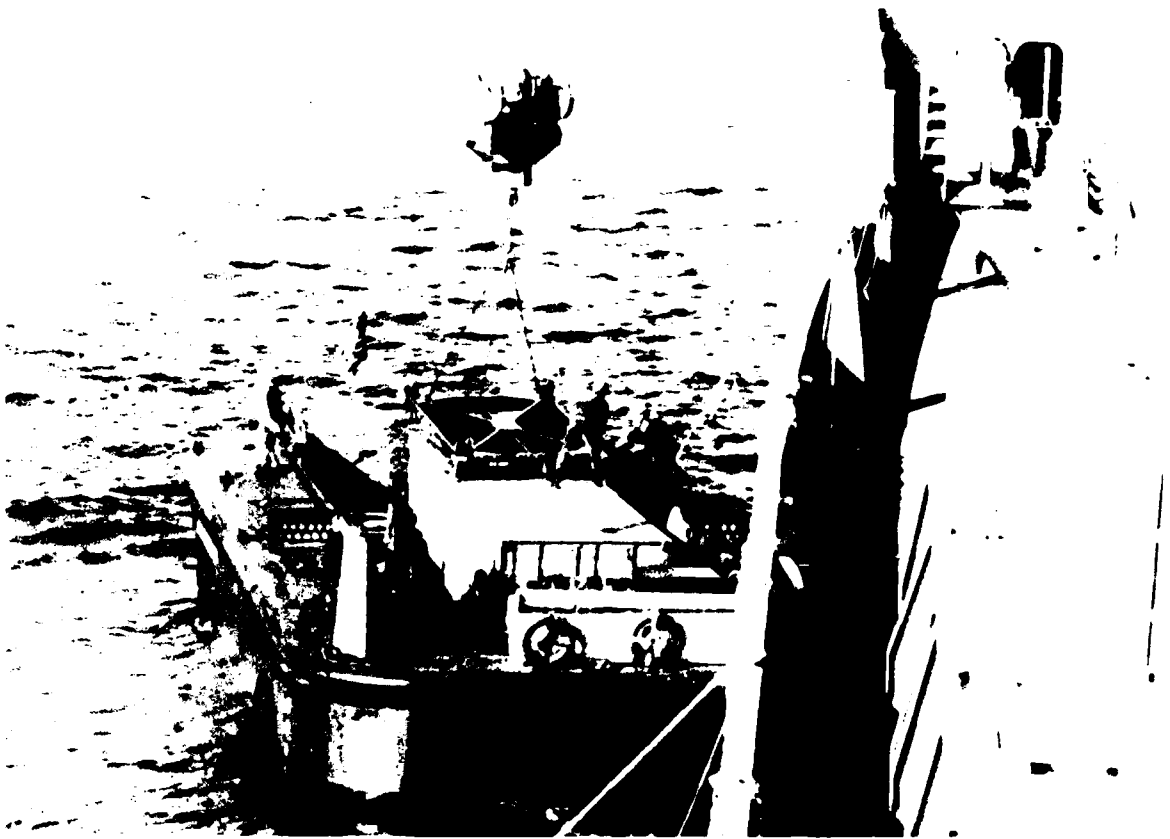


Aerial view of the container ship EXPORT LEADER moored alongside the crane ship KEYSTONE STATE with the cranes loading an Army LACV 30

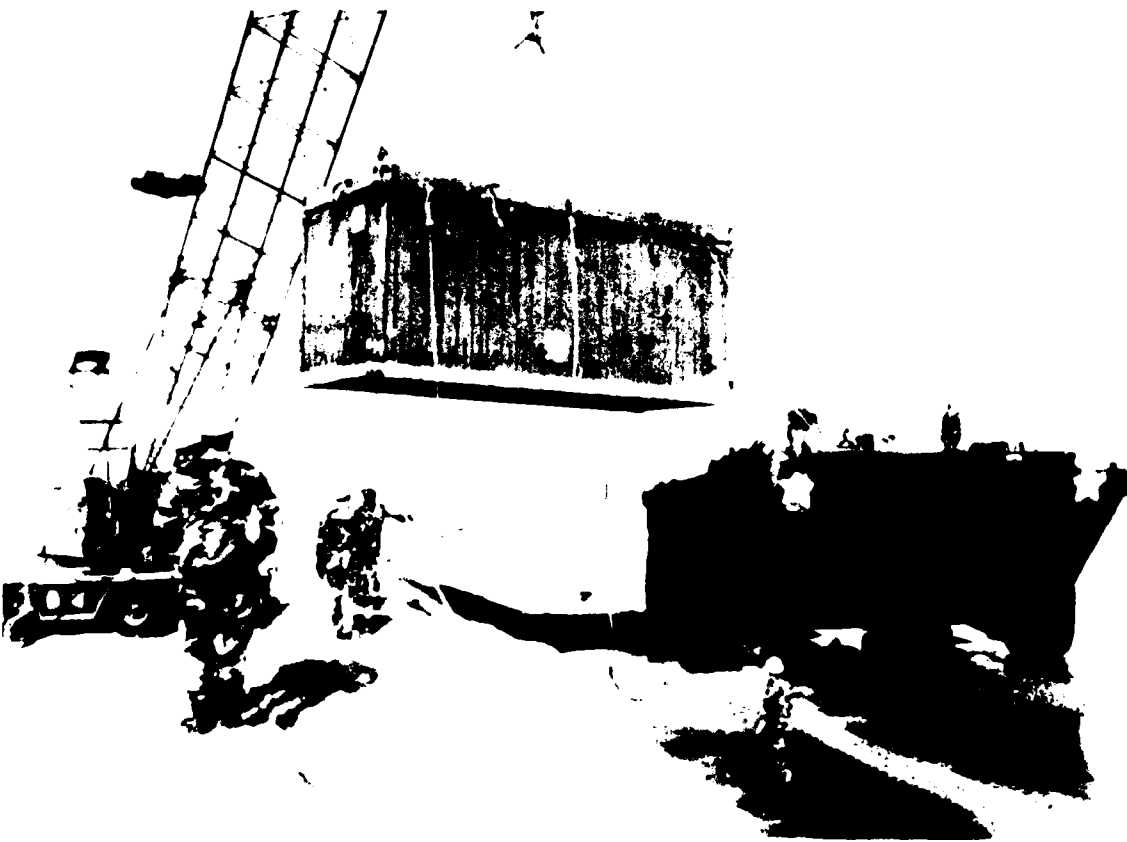


A LACV-30 (above) loaded with containers in transit from the crane ship to the beach where it is then offloaded (below) at the Amphibious Discharge Site using a 140 ton crane. A RTCH then completes the offload sequence by loading the container on a truck going to the marshalling area.



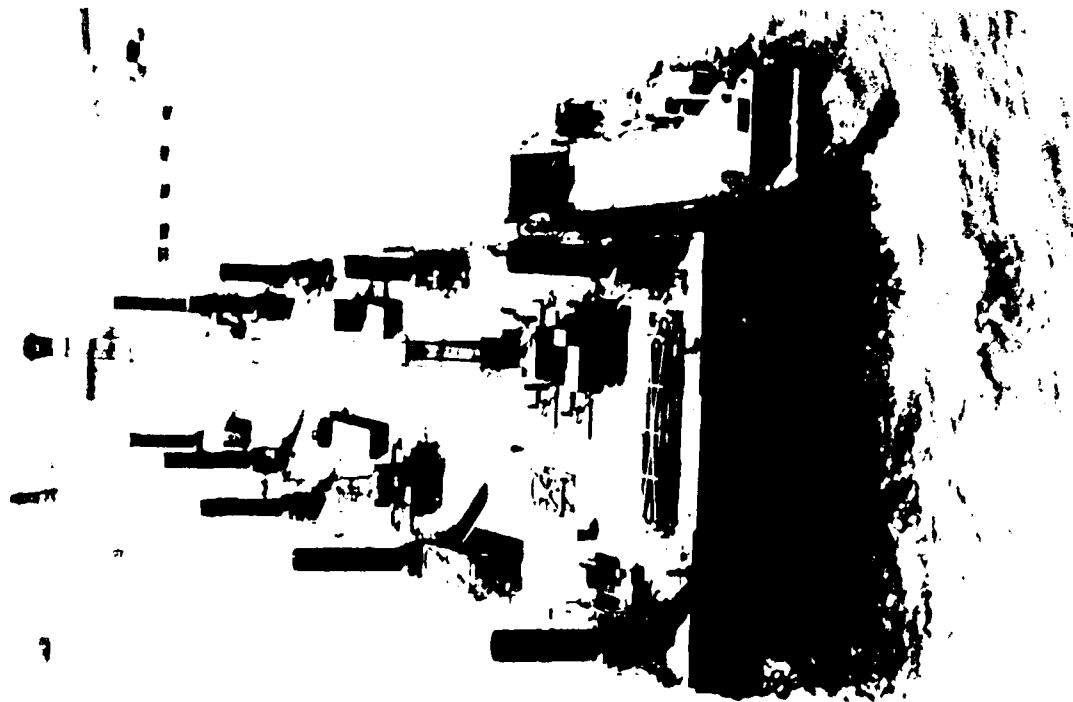


**An Army LARC-60 (top) is loaded with two containers at the crane ship and offloaded on the beach at the Amphibious Discharge Site with the use of a 140 ton crane.**

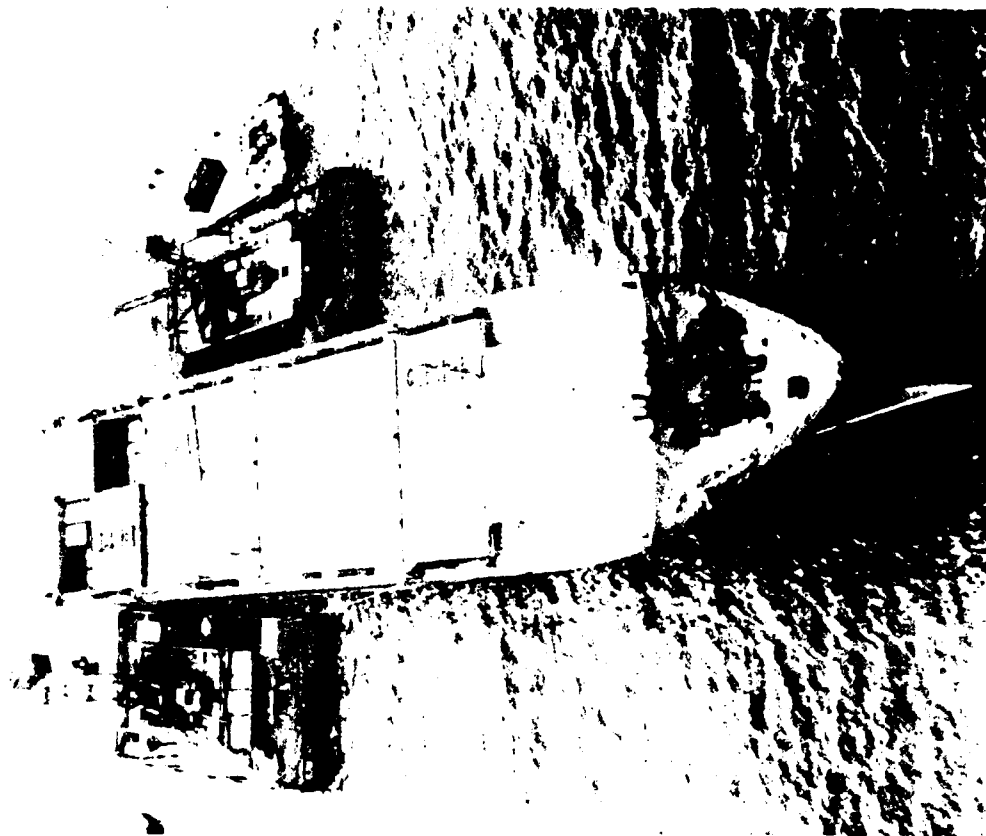




Aerial view of the beach showing the Navy Elevated Causeway System (ELCAS) and the Army DeLong Pier installed in their operational configuration.



LEFT: The Army DeLong Pier conducts container offload from an LCU that is moored alongside.



RIGHT: The EXPORT LEADER at anchorage with two of the Army's Temporary Container Discharge Facilities (TCDF) moored alongside conducting container offload operations to waiting LACV-30's.



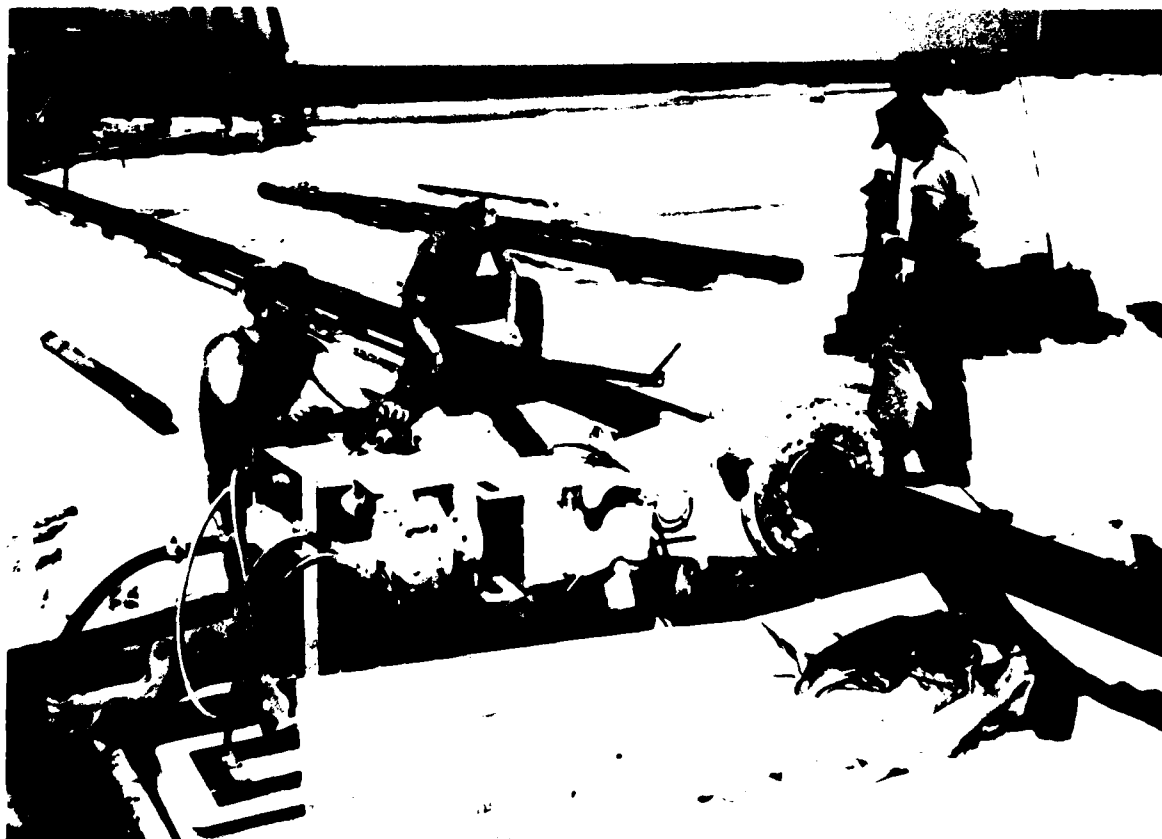
**ABOVE:** Empty vehicles are queued on the ELCAS to receive containers from the mobile crane mounted on the ELCAS.

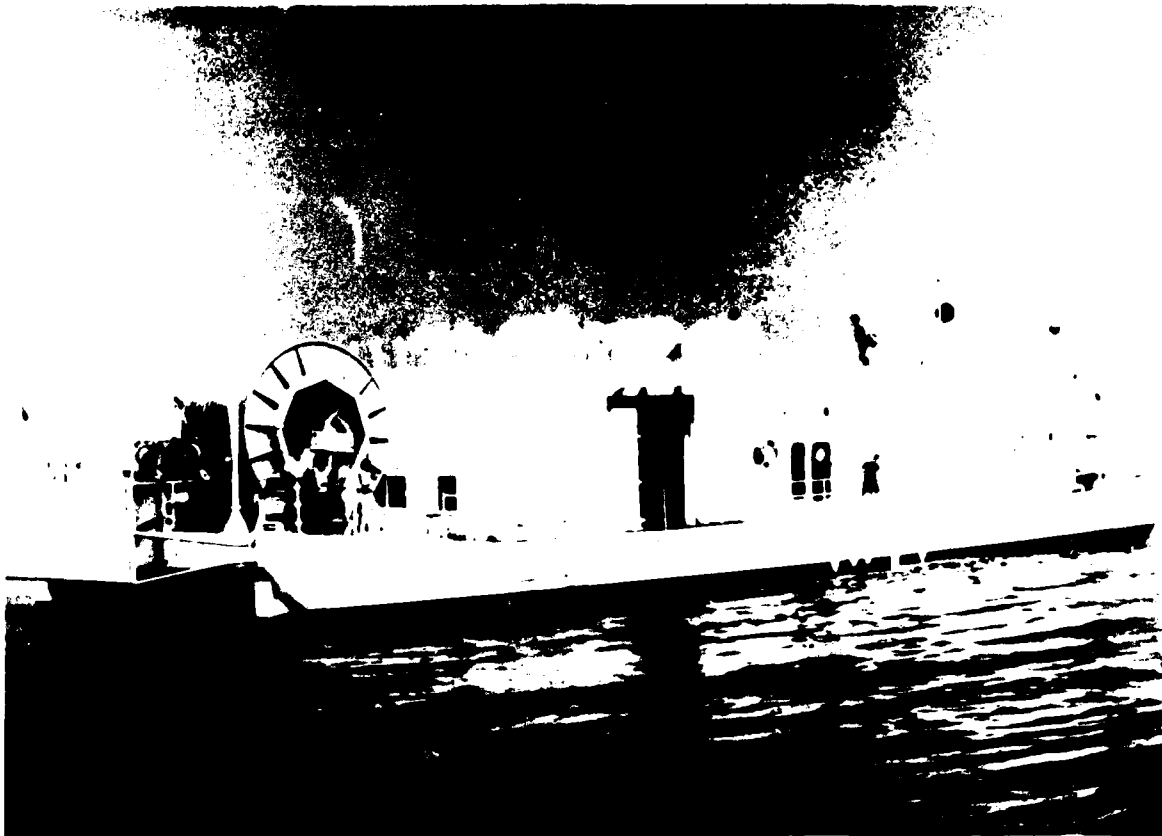
**BELOW:** A 40 foot container departs the DeLong Pier destined for the marshalling area.





Various POL systems were used during the throughput phase of the test. The Dracone system, a floating fuel bladder (left) receives fuel at the tanker. Below, a steel, bottom laid, pipeline system is being assembled on the beach to receive fuel from offshore.



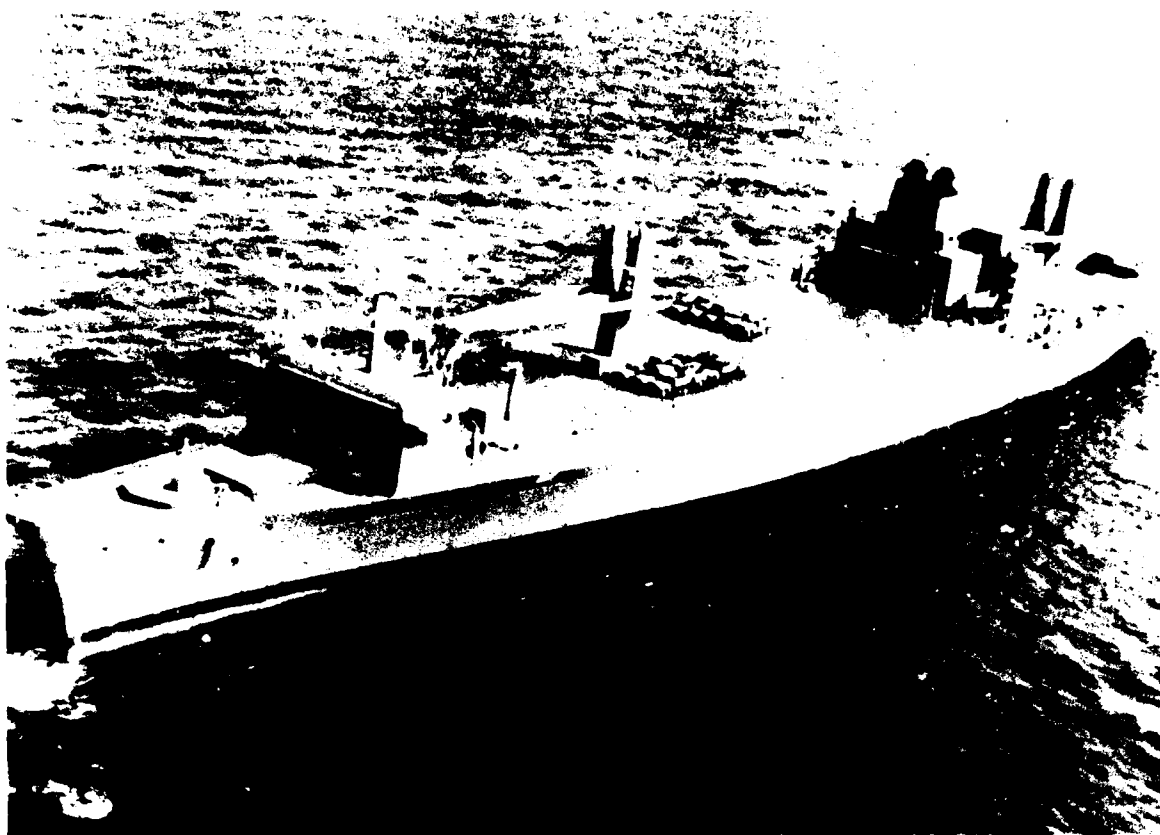


**A Reverse Osmosis Water Purification Unit (ROWPU), anchored off Fort Story, demonstrated the capability to convert salt or brackish water into potable water and pump it ashore.**

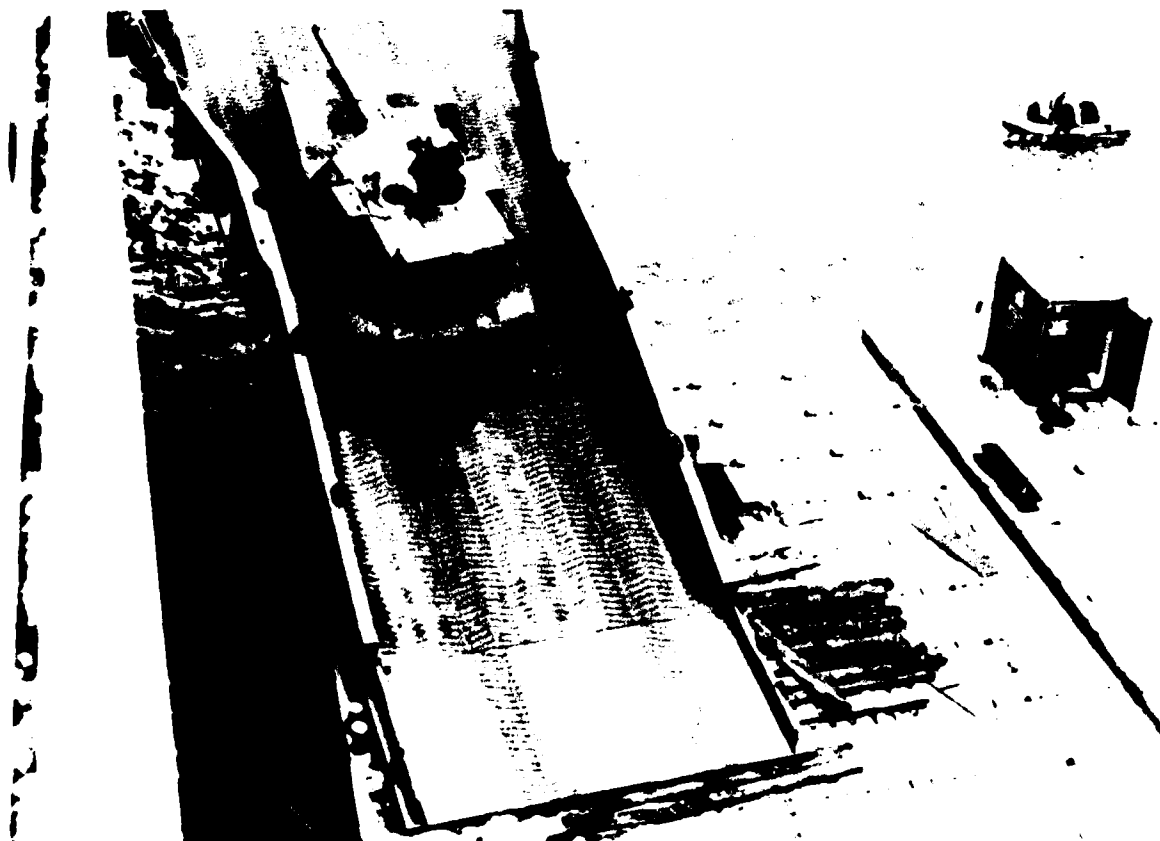
## **JLOTS II DEMONSTRATIONS**

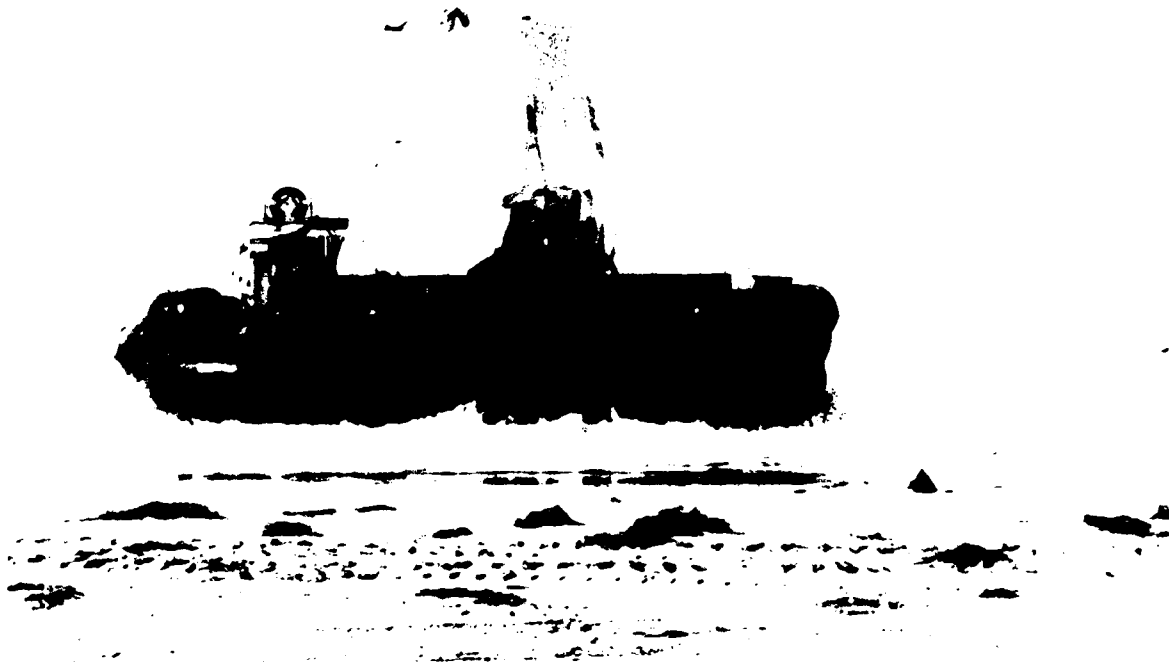
The T—AKR demonstration centered on the capabilities of the new Fast Sealift Ships (FSS) to discharge cargo over the shore. The FSS Program provides ships capable of expeditious loading and unloading of military vehicles and equipment and is intended to enhance rapid deployment of military equipment and supplies located in the continental US to potential objective areas throughout the world. The T—AKR Program involved the procurement of eight SL—7 class high—speed container ships and their conversion to a mixed cargo configuration. The USNS Capella was designated as the demonstration ship for JLOTS II.

The Maritime Prepositioning Ship (MPS) demonstration was conducted with the lead ships of the MAERSK and WATERMAN class. The purpose of the demonstration was to assess the operational capabilities of each ship and obtain data on performance during in-stream operations. The MPS program was developed to load dedicated ships for prepositioning equipment to overseas locations, and will provide lift, maintenance facilities, and controlled environmental preservation for a balanced portion of the equipment, supplies, POL, and potable water to support a Marine Amphibious Brigade (MAB). The MAERSK and WATERMAN class of ships were converted from combination RO/RO container ships. The Motor Vessels (MV) CPL. LOUIS B. HAUGE JR. and SGT. MATE J. KOCK, lead ships of the MAERSK and WATERMAN classes, were selected for the JLOTS II demonstration.



The T-AKR ship USNS CAPELLA, at anchorage off Fort Story, Virginia (above) prepares to commence offload operations. A tank is driven off CAPELLA (below) onto the RO/RO Discharge Facility as part of the offload sequence.





**ABOVE: A LACV-30 approaches the beach to discharge a helicopter loaded from USNS CAPELLA as part of the T-AKR offload.**

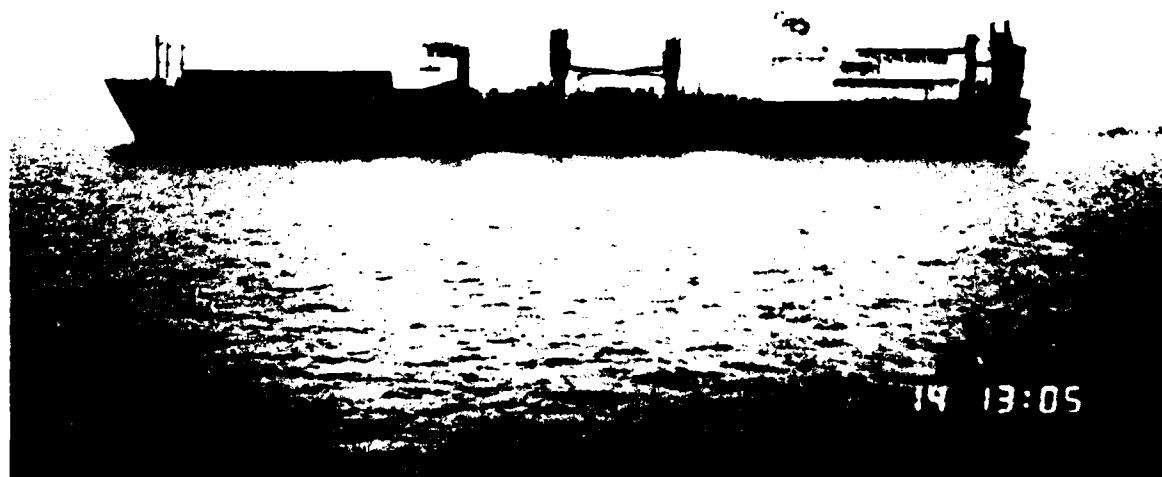
**BELOW: A Blackhawk helicopter is offloaded from CAPELLA into a waiting lighter during the operations.**

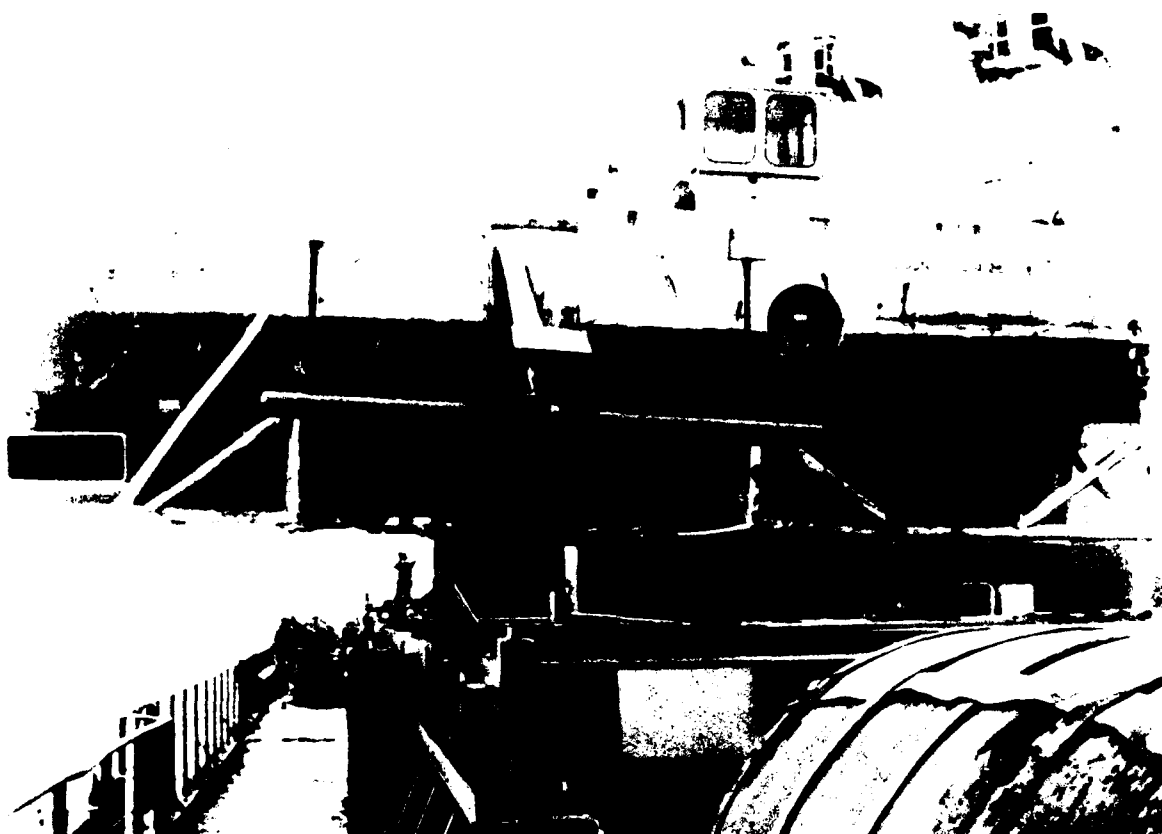




**ABOVE: The MPS ship CPL LOUIS B. HAUGE at anchorage off Fort Story prepares to discharge cargo and equipment as part of the demonstration.**

**BELOW: The MPS ship SGT MATE J. KOCAK at anchorage off Fort Story also prepares to discharge its cargo and equipment as part of the demonstration.**





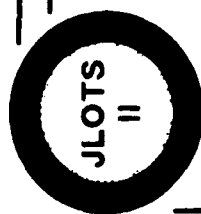
**ABOVE:** The MPS ship HAUGE demonstrates the capability to onload a powered causeway onto the deck of the ship while offshore.

**BELOW:** An amphibious assault vehicle departs the lowered ramp of the MPS ship KOCAK during its demonstration.

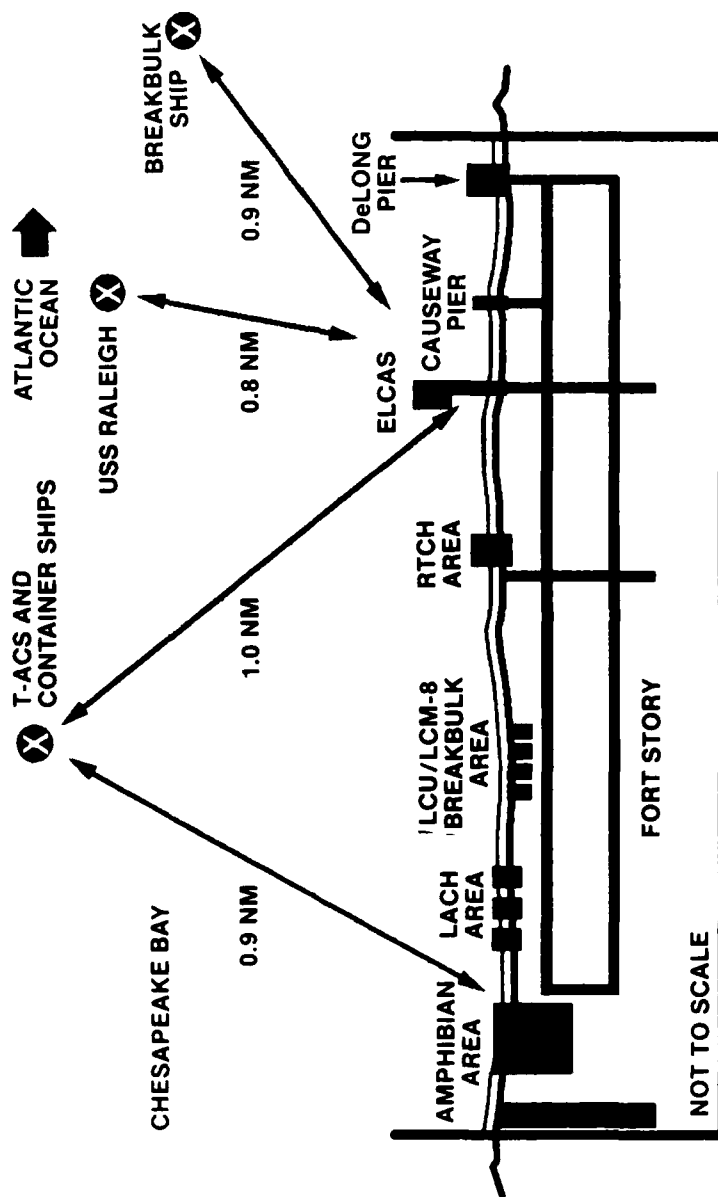




Aerial view of the beach with the various systems in operation during the throughput phase of the operations.









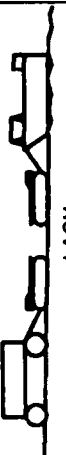
















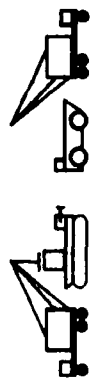








# JLOTS II BEACH LAYOUT



This chart shows the relative location of ships offshore and the beach systems used for Throughput Test operations.

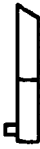




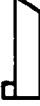


# JLOTS II BEACH DISCHARGE SYSTEMS

BEACH OFFLOAD FACILITY	LIGHTER (TRIPS)	AVG NUMBER OF CONTAINERS PER OFFLOAD	OFFLOAD CYCLE TIME (MIN) (APPROACH, MOOR, OFFLOAD & CLEAR)	MIN/ CONT*
 ELCAS	 LCU (22)	 4	 54	12
 DELONG PIER	 LCU (52)	 5	 47	10
 LACH	 LCU (12)	 4	 45	11
 RTCH AREA	 CSP+1 (11)	 9	 48	5
	 CSP+2 (8)	 16	 74	4
	 CSP+ (9)	 26	 102	4
	 CF (16)	 23	 97	4
 AMPHIB AREA	 LARC-LX (59)	 2	 7	3
	 LACV-30 (191)	 2	 7	3

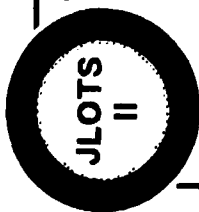
\*PER LIGHTER SLOT OR MOORING POSITION

This chart summarizes the beach discharge systems performance for different lighter types and average payloads during Throughput Test operations.

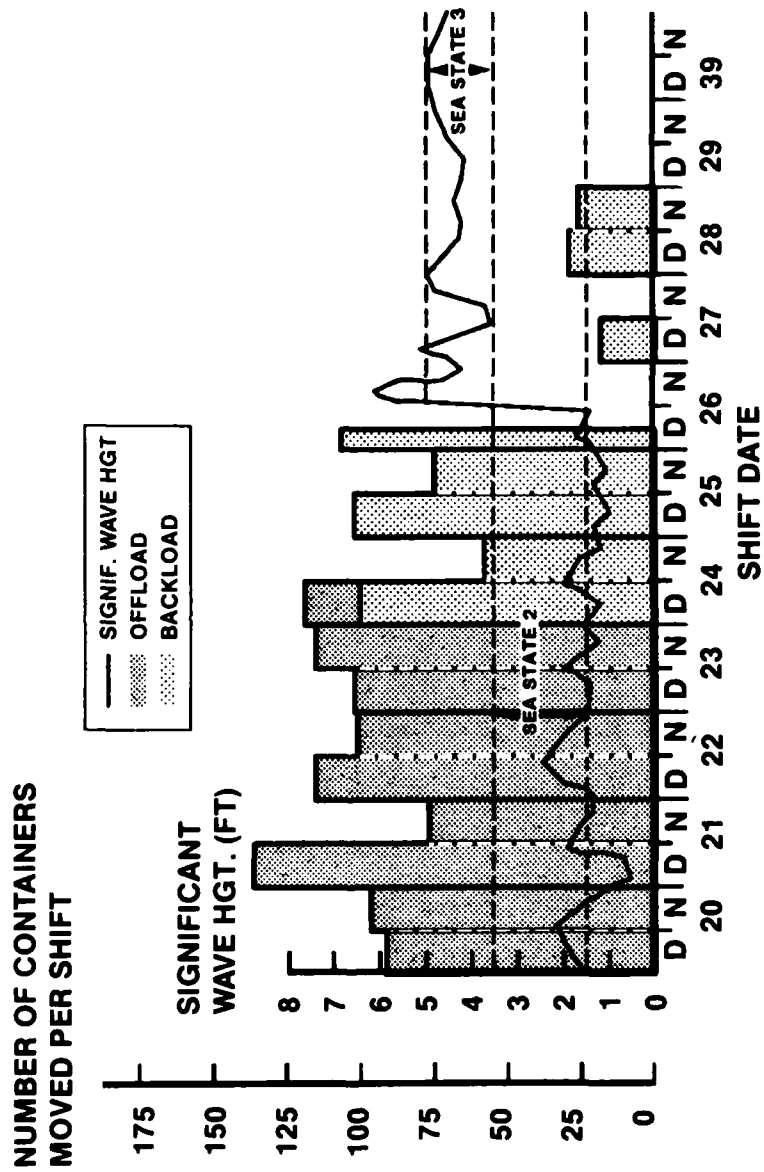
# JLOTS II LIGHTER TRANSFER RATES AT T-ACS

LIGHTER TYPE	TOTALS TRIPS	CONTAINERS PER TRIP		AVG LOAD TIME	AVG MIN/ CONT*	TRANSIT TIME**
		MAX	AVG			
CSP+1 	11	10	9	68	8	20
CSP+2 	8	18	16	82	5	21
CSP+3 	10	30	26	106	4	23
CAUSEWAY FERRY 	17	29	23	84	4	24
LCU 1610 	69	5	4	36	9	12
LCU 1466 	28	8	6	49	8	15
LARC-LX 	71	4	2	19	9	15
LACV-30 	201	2	2	18	9	7
* AVERAGE LOAD TIME: APPROACH, MOOR, LOAD & CLEAR (TIME IN MINUTES)						
** TRANSIT TIME: AVERAGE TIME TO TRAVEL SHIP-BEACH (ONE MILE)						

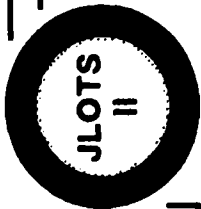
This chart indicates the performance of lighters in container transfer from the TACS during the Throughput Test.



# NAVY/T-ACS OPERATIONS SEPT 1984

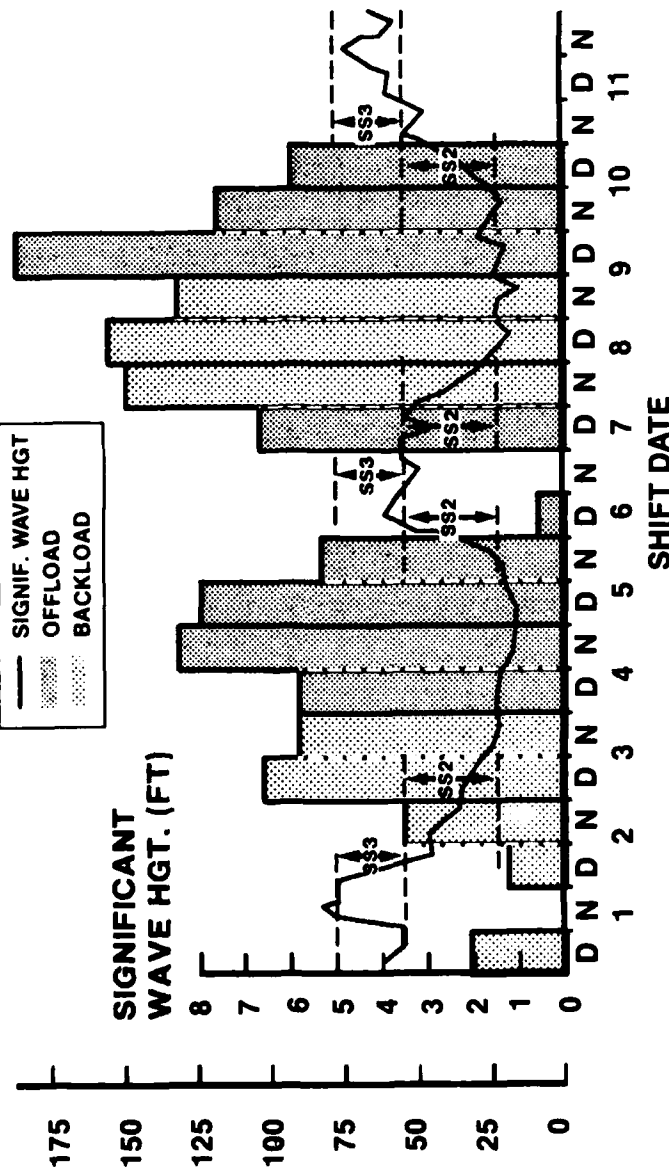


This chart depicts the relationship between sea state and container handling during the Navy portion of the Throughput Test.



# ARMY/T-ACS OPERATIONS OCT 1984

NUMBER OF CONTAINERS  
MOVED PER SHIFT



This chart depicts the relationship between sea state and container handling during the Army portion of the Throughput Test.

JLOTS  
II

## ACTUAL JLOTS II CONTAINER OFFLOAD PRODUCTIVITY

### AVERAGE CONTAINER PRODUCTIVITY PER SHIFT AT T-ACS\*

	SS 1	SS 2	SS 3
NAVY OFFLOAD	106	106	0
ARMY OFFLOAD	130	94	11

### PEAK CONTAINER OFFLOAD PRODUCTIVITY PER SHIFT BY LIGHTERAGE MIX AT T-ACS\*

	SS 1	SS 2	SS 3
CAUSEWAY FERRY (CF)	114	107	0
CF/LCU MIX	104	107	0
LACV/LCU/LARC	116	90	11
LARC	—	105	0
LACV	187	—	0
	117	—	0

\*PRODUCTIVITY IS DEFINED AS THE NUMBER OF CONTAINERS FOR  
A SINGLE 10 HOUR WORK SHIFT.

This table summarizes overall container productivity during the Throughput Test in relation to sea state.

ABREVIATION	NARRATIVE
CF	Causeway Ferry
DF	Discharge Facility
■ ELCAS	Elevated Causeway
JLOTS	Joint Logistics Over The Shore
LACH	Lightweight Amphibious Container Handler
LACV-30	Lighter Air Cushion Vehicle 30 Ton
LARC-60	Lighter Amphibious Resupply Cargo 60 Ton
LASH	Lighter Aboard Ship
LCU	Landing Craft Utility
MOMAT	Mobility Matting
MPS	Maritime Prepositioning Ship
POL	Petroleum Oils Lubricants
RO/RO	Roll On/Roll Off
ROWPU	Reverse Osmosis Water Purification Unit
RTCH	Rough Terrain Container Handler
SEABEE	Sea Barge
TCDF	Temporary Container Discharge Facility
USA	United States Army
USAF	United States Air Force
USMC	United States Marine Corps
USN	United States Navy

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Tugboats	24, 25
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**END**

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